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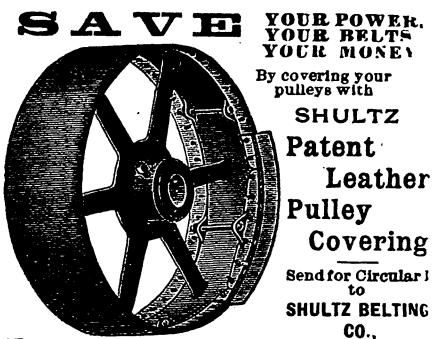
A Review of the Hardware, Iron and Metal Trades.

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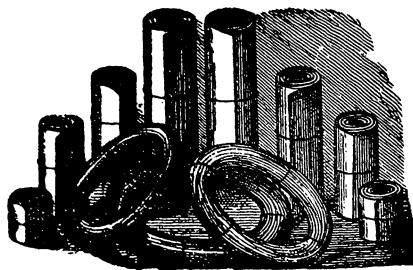
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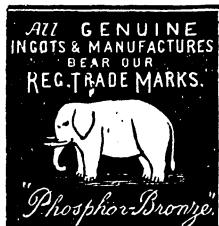
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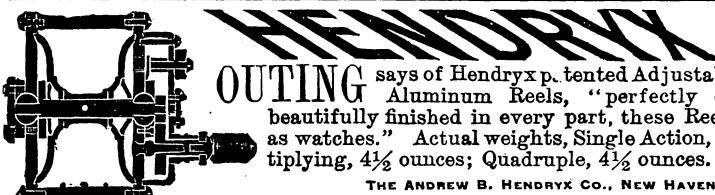
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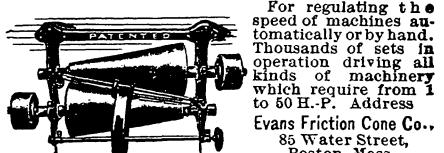
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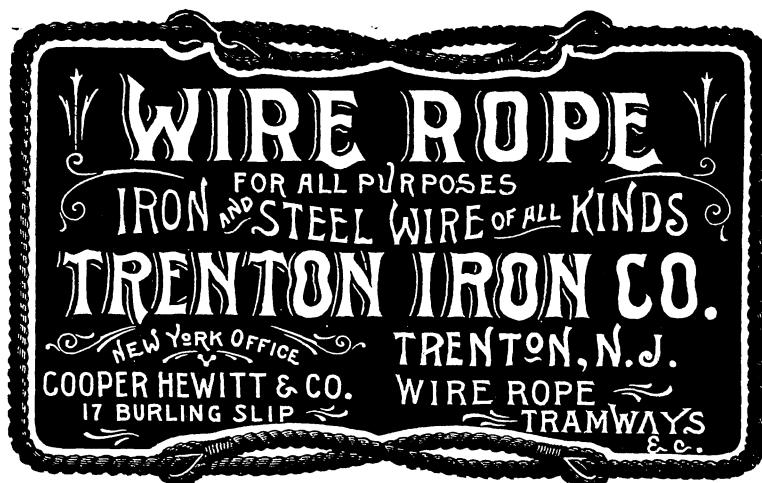
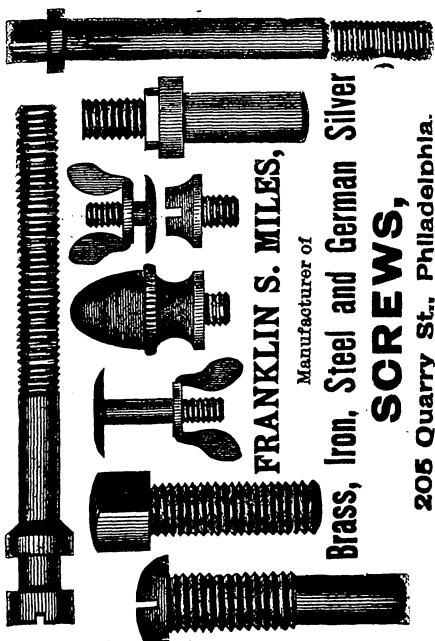
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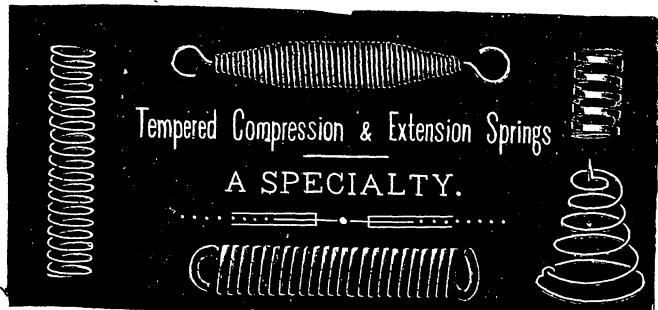


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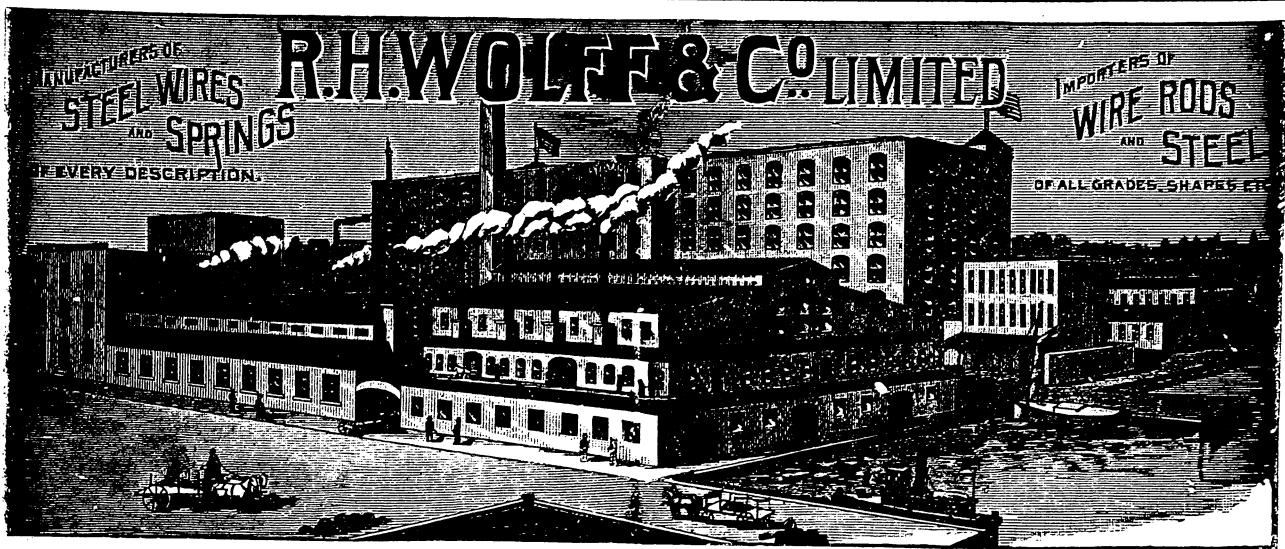
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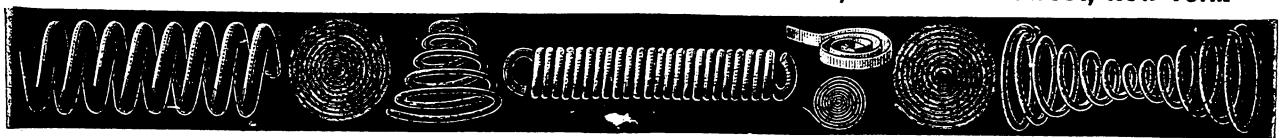
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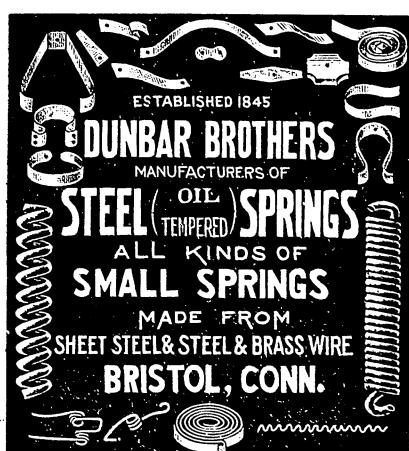
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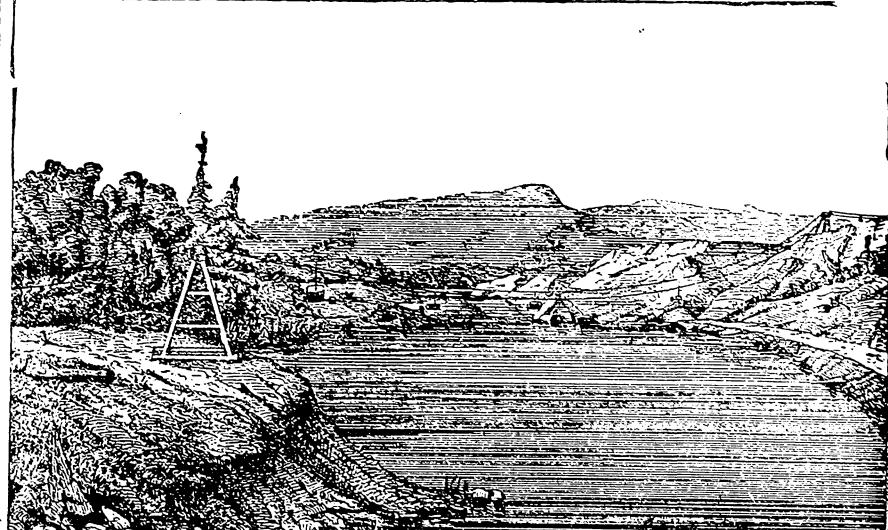
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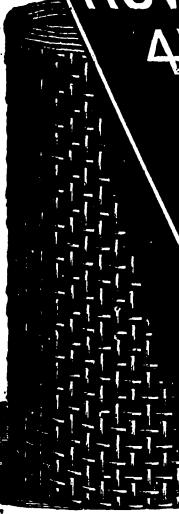
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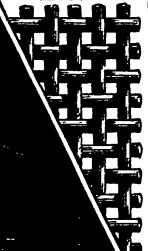
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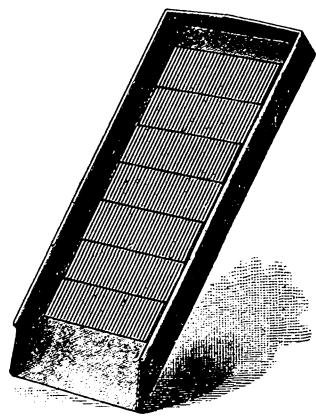
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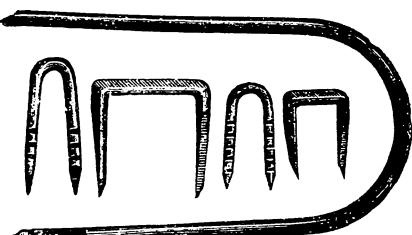

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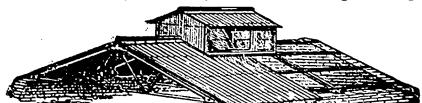
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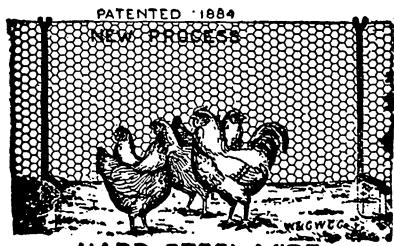
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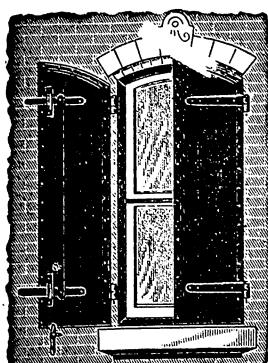
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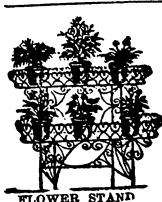
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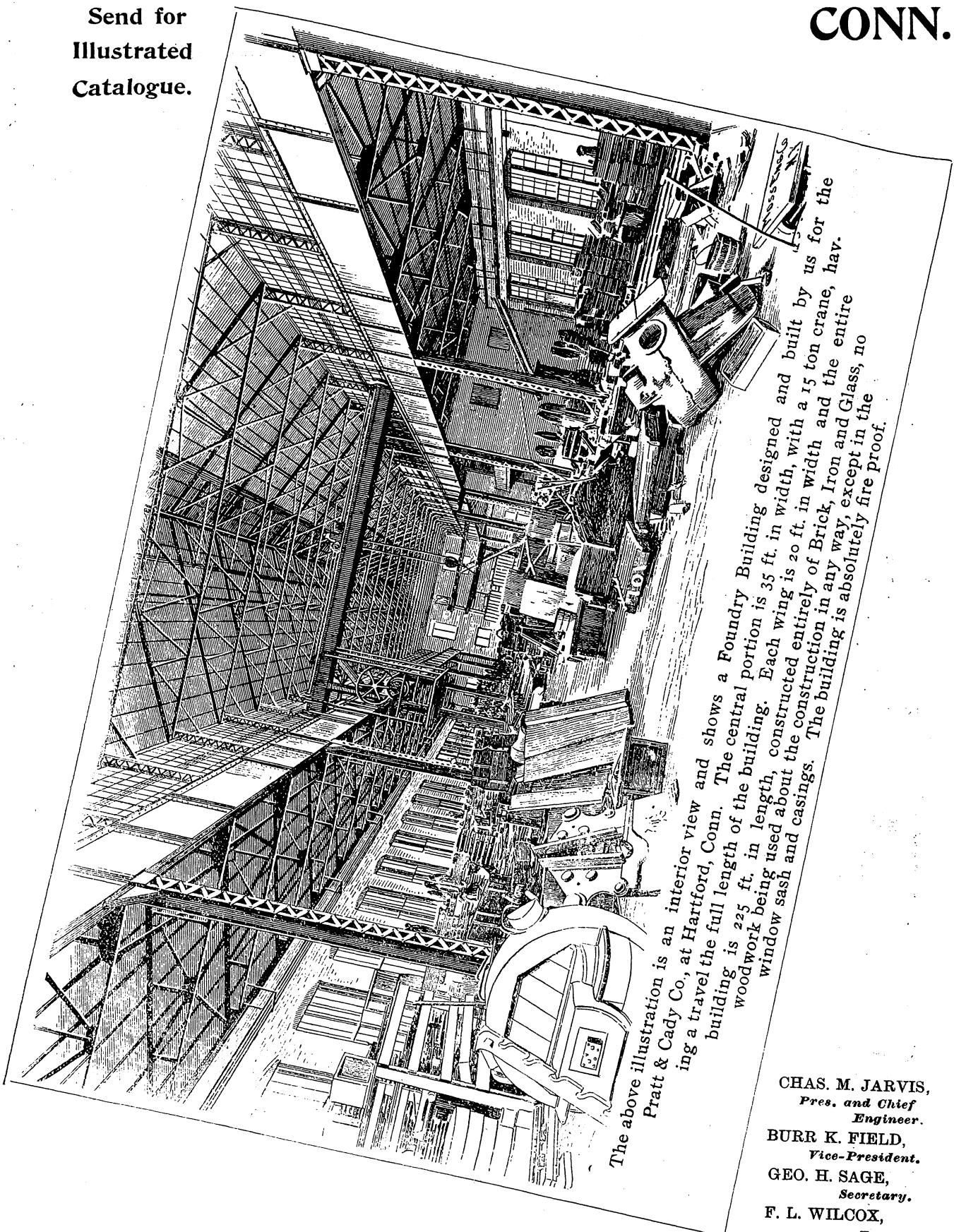
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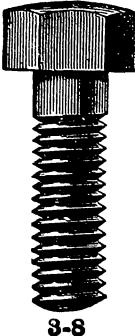
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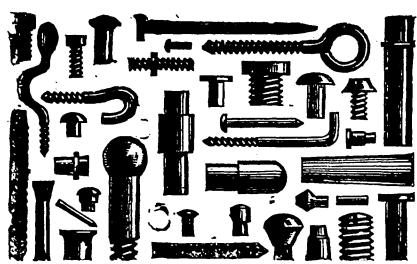
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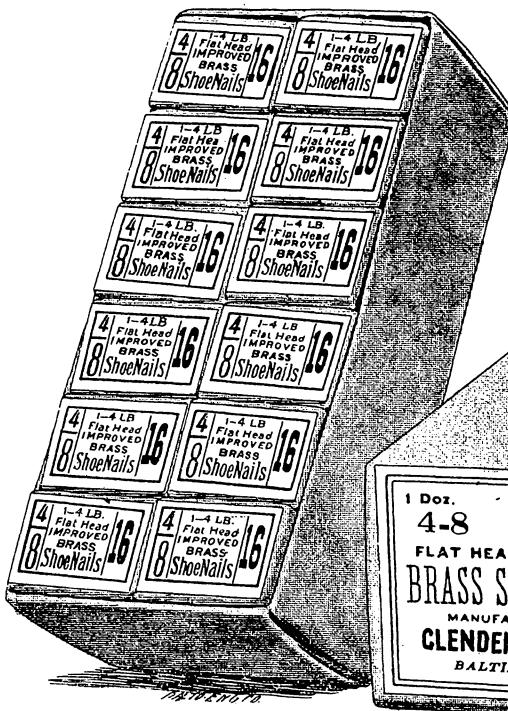
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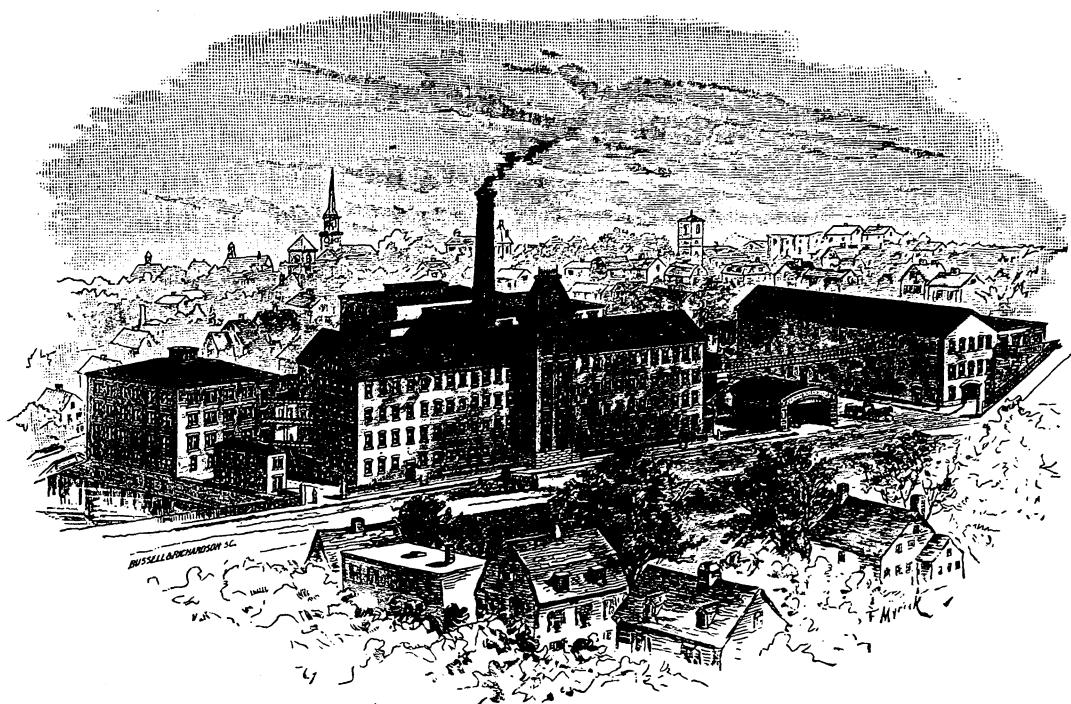
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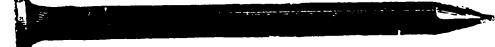
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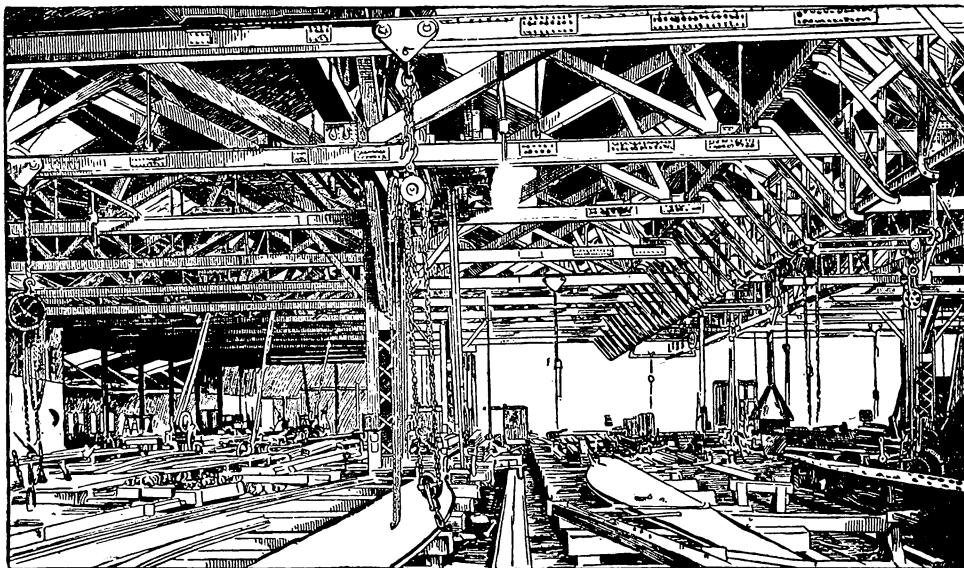
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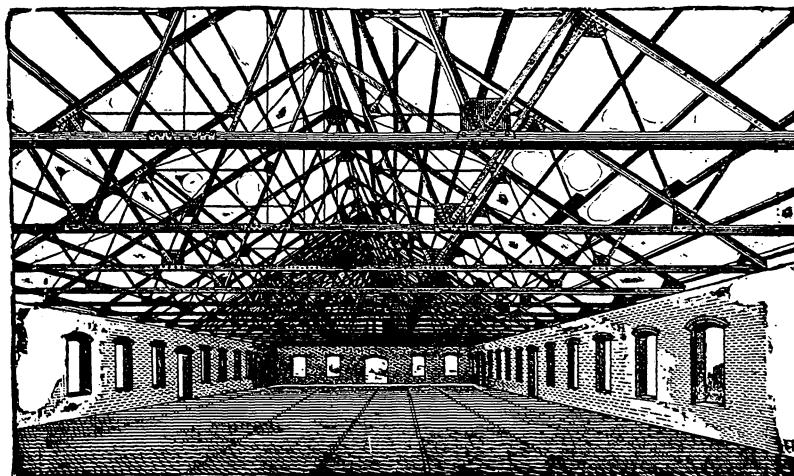
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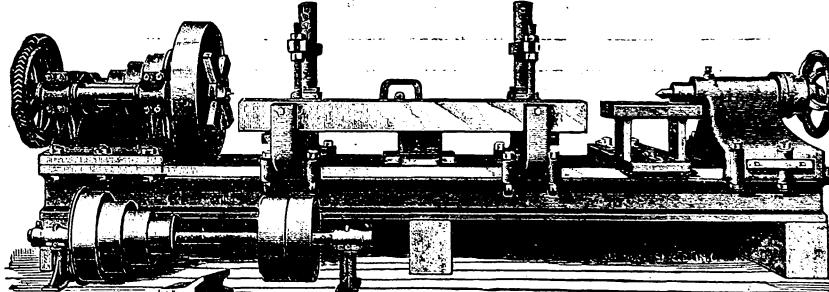
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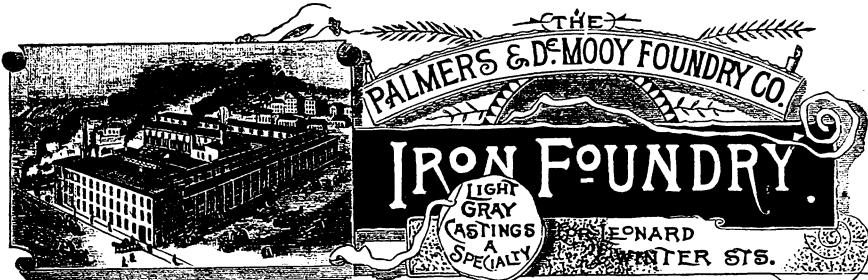
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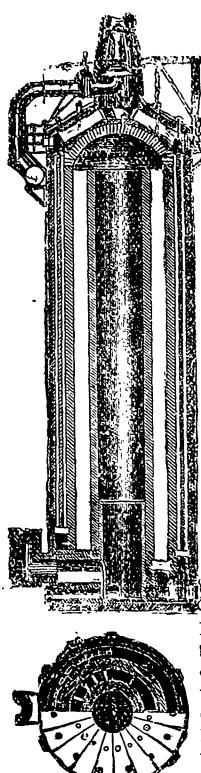
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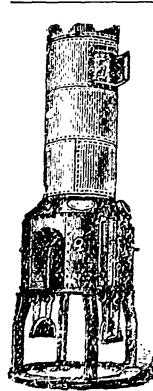
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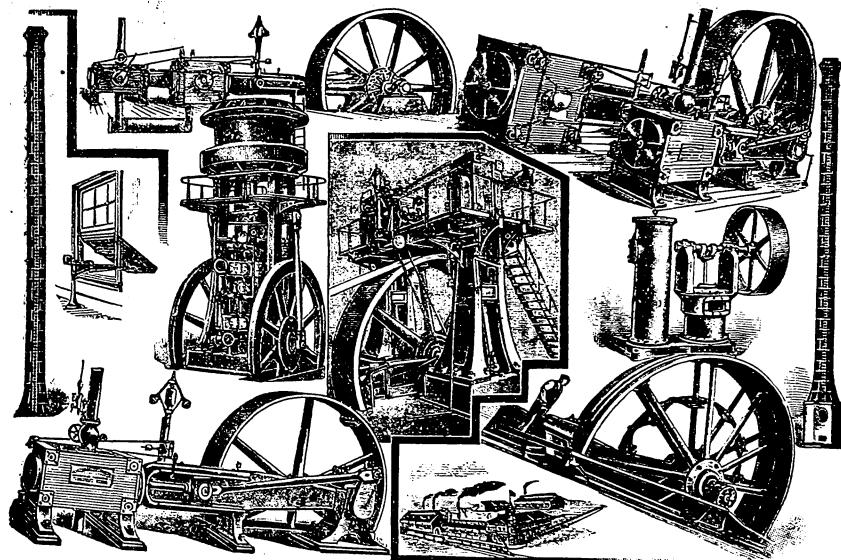
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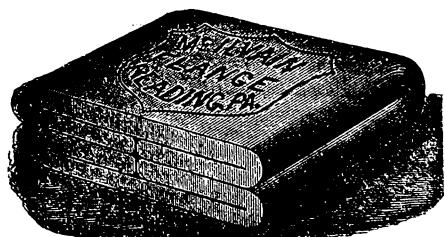
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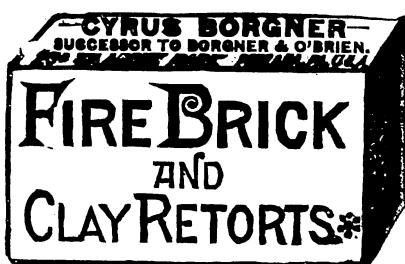
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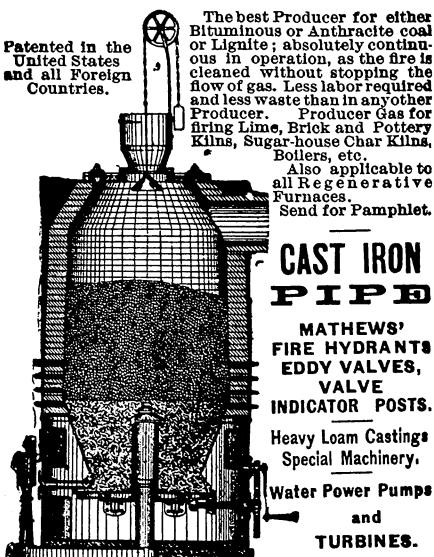
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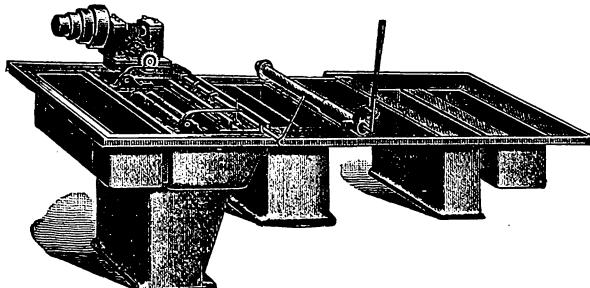
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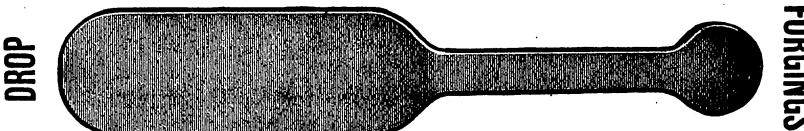
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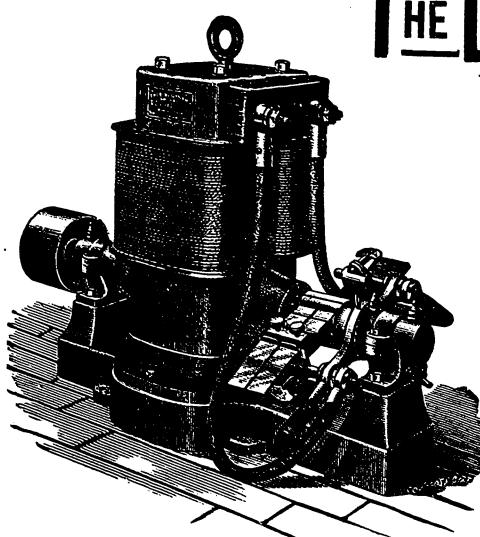
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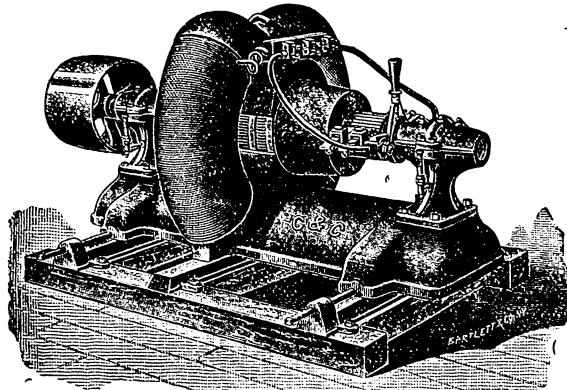
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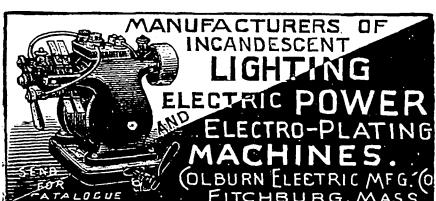
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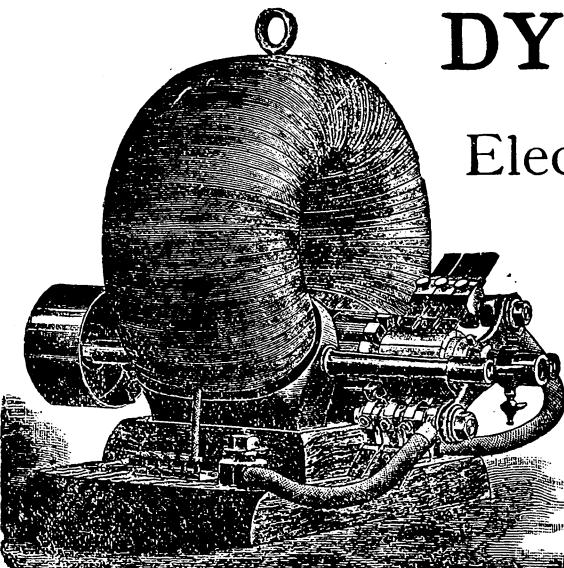


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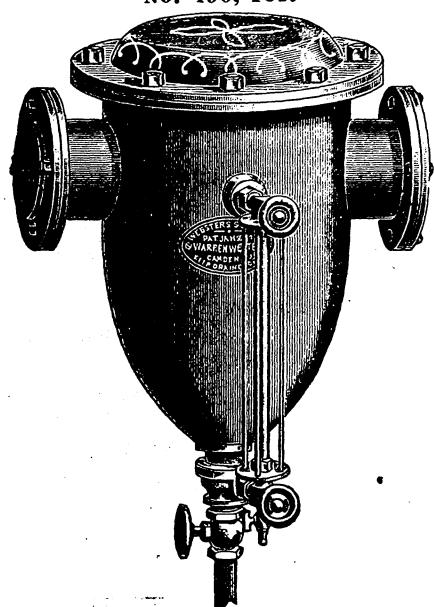
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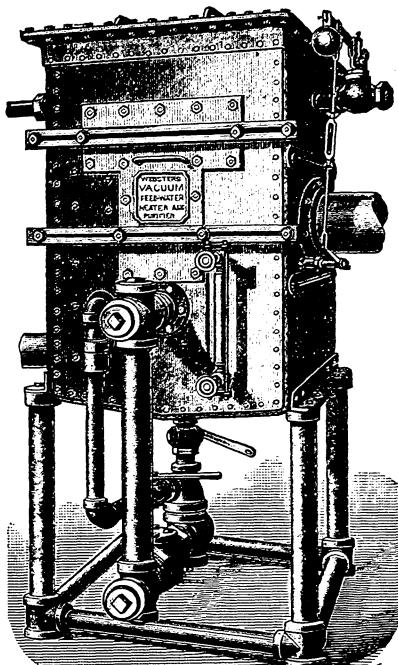
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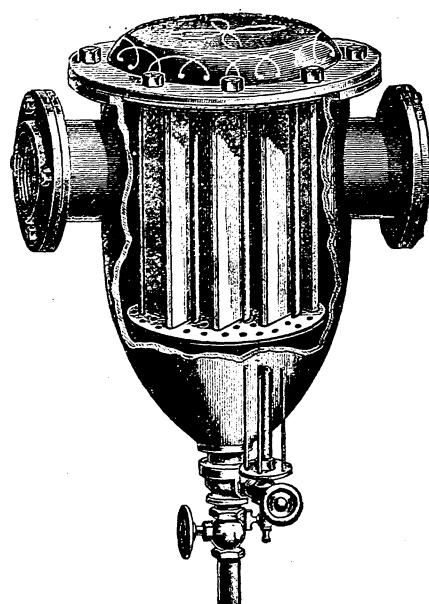
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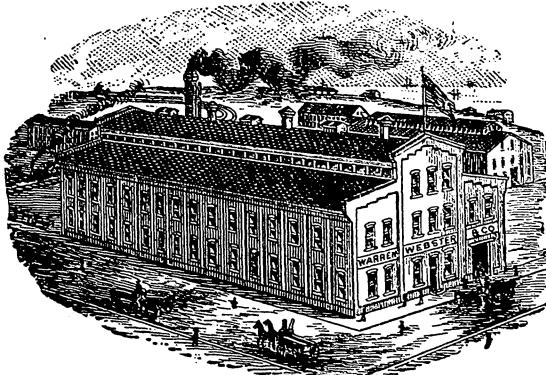
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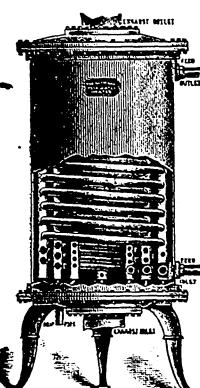
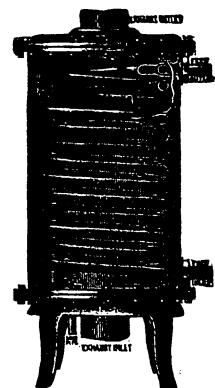
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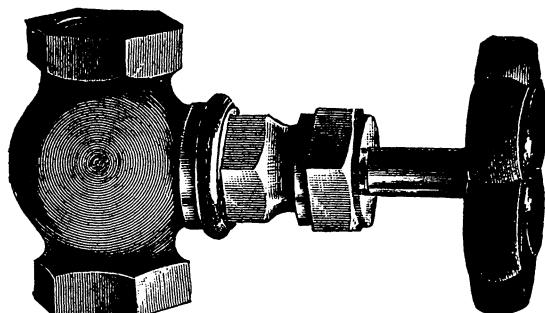
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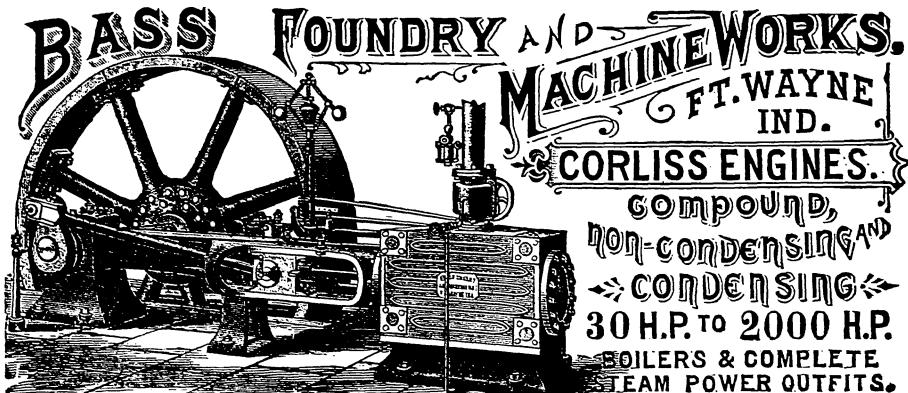
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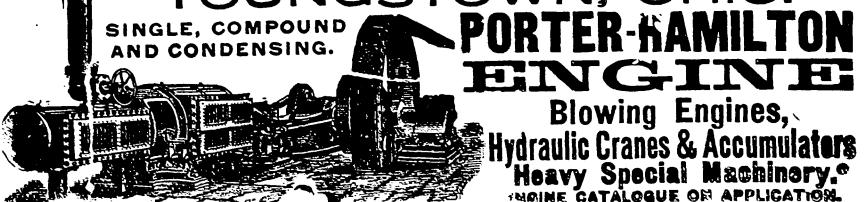
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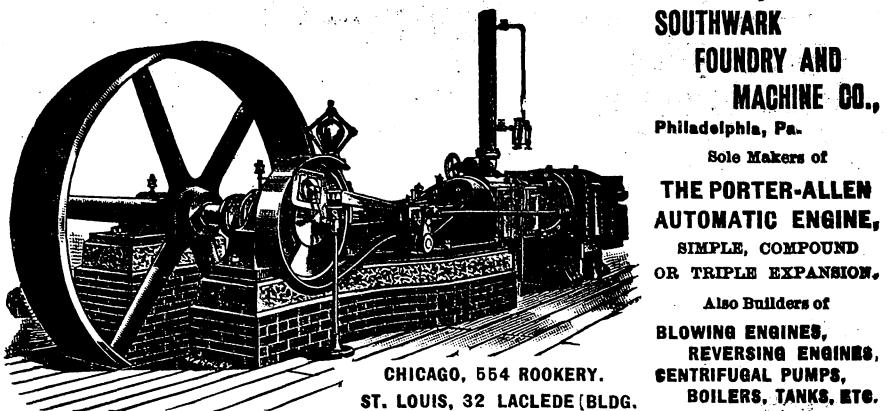
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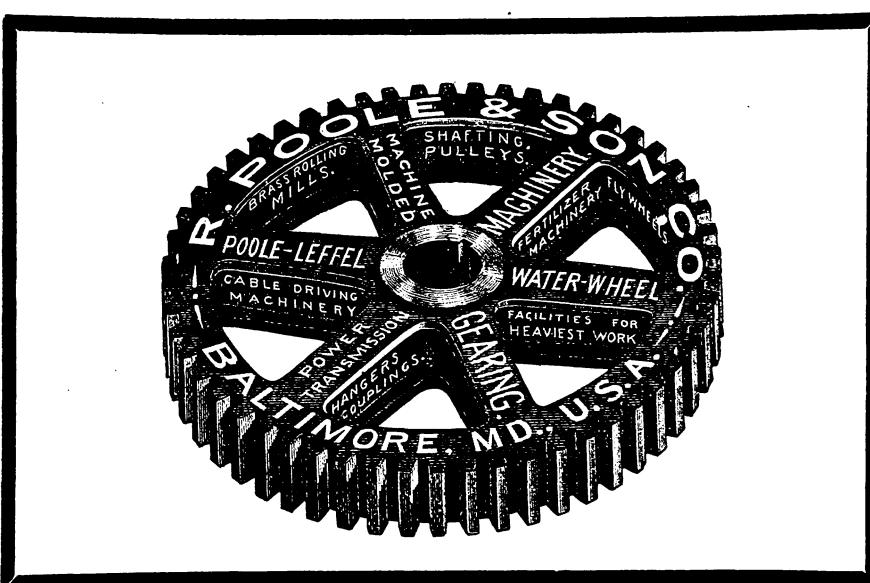
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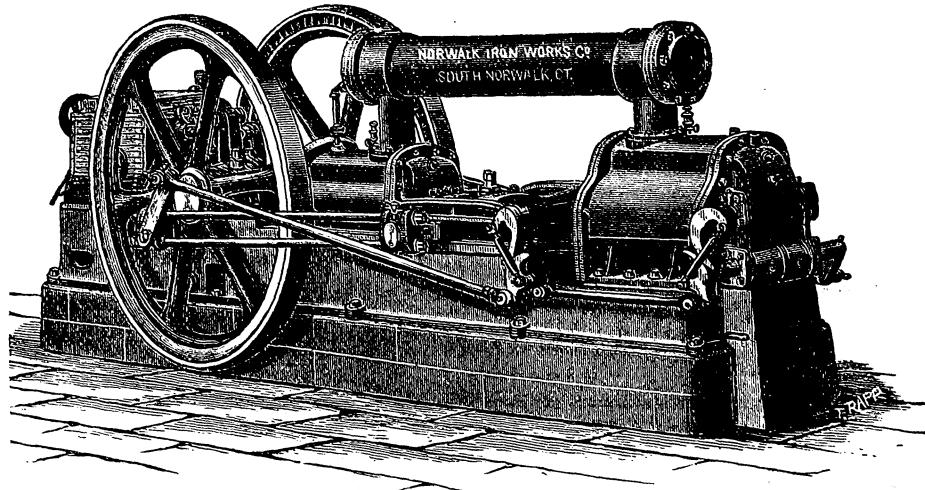
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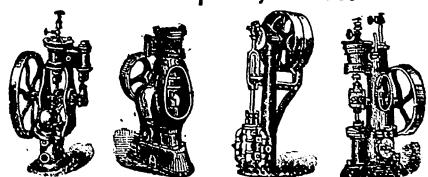


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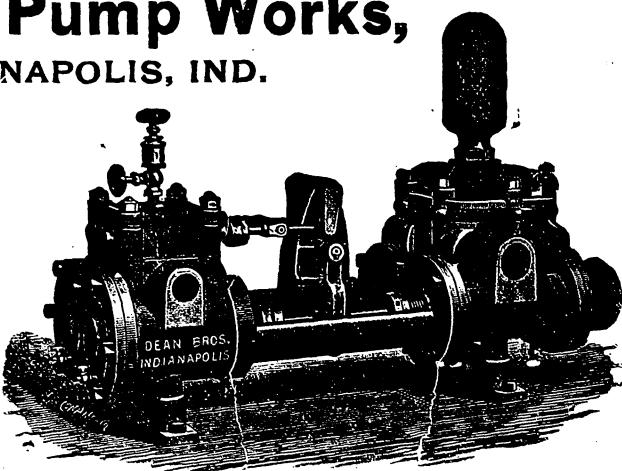
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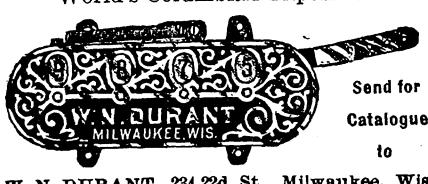
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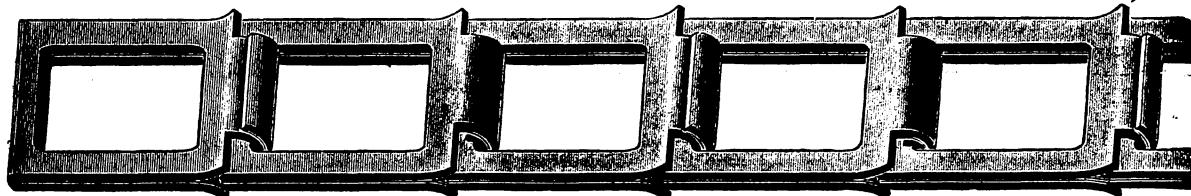
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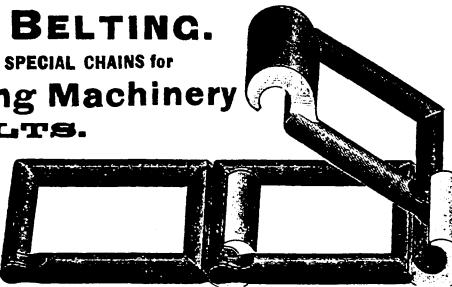
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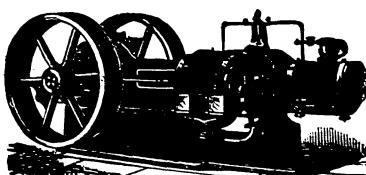


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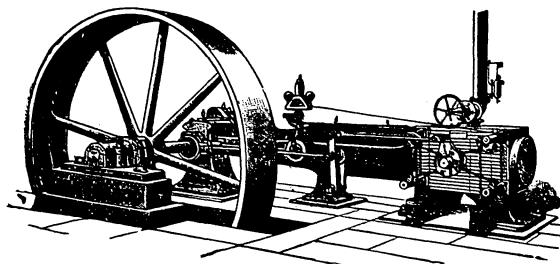


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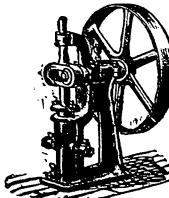
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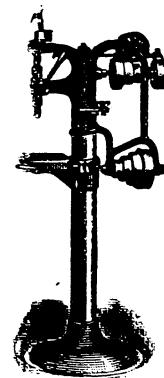
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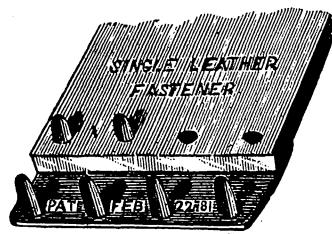
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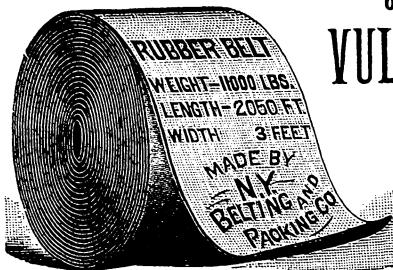
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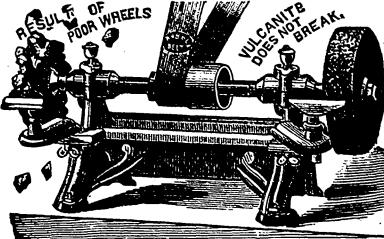
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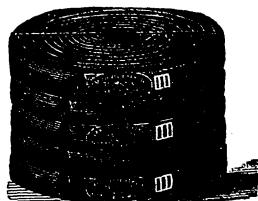
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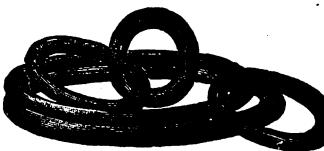
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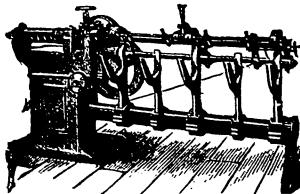
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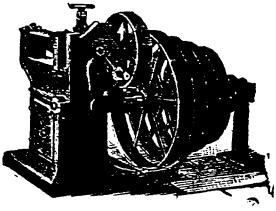
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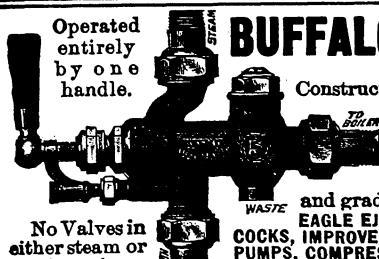


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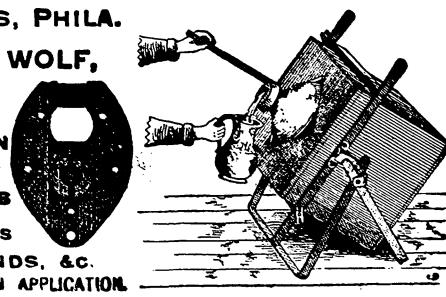
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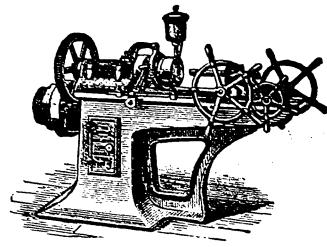


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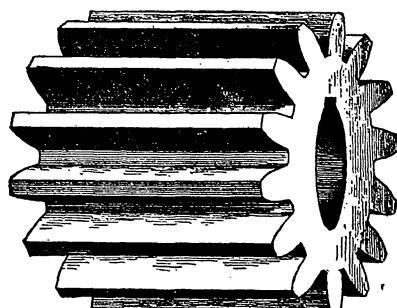
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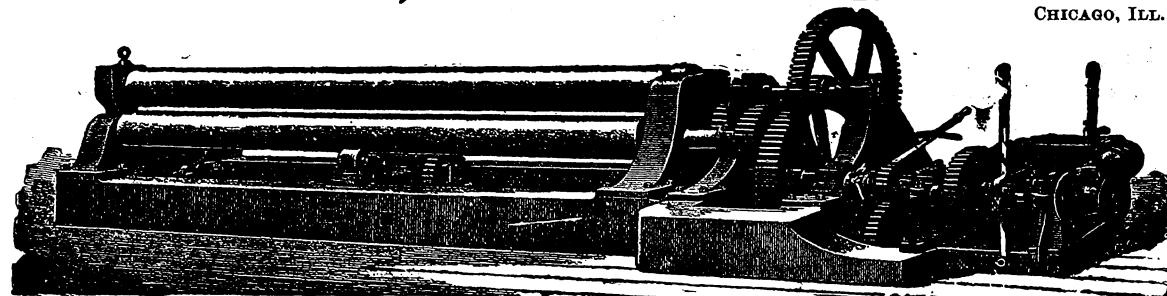
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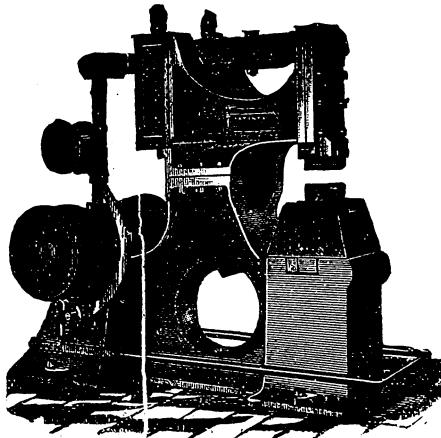
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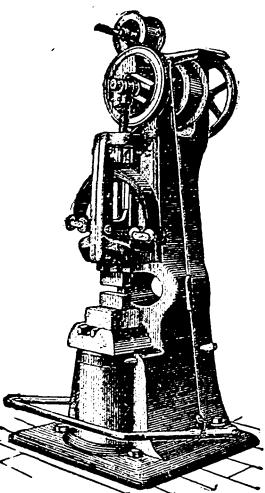
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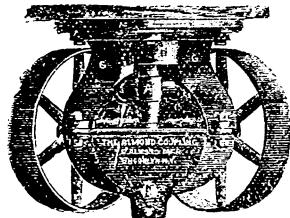
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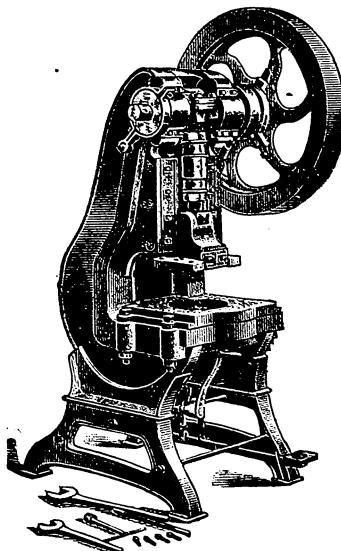
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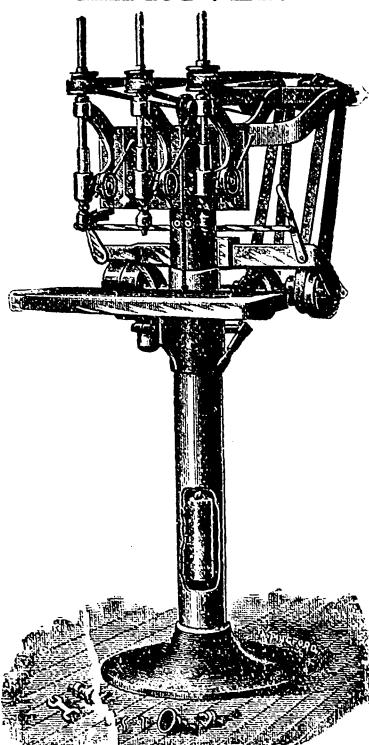


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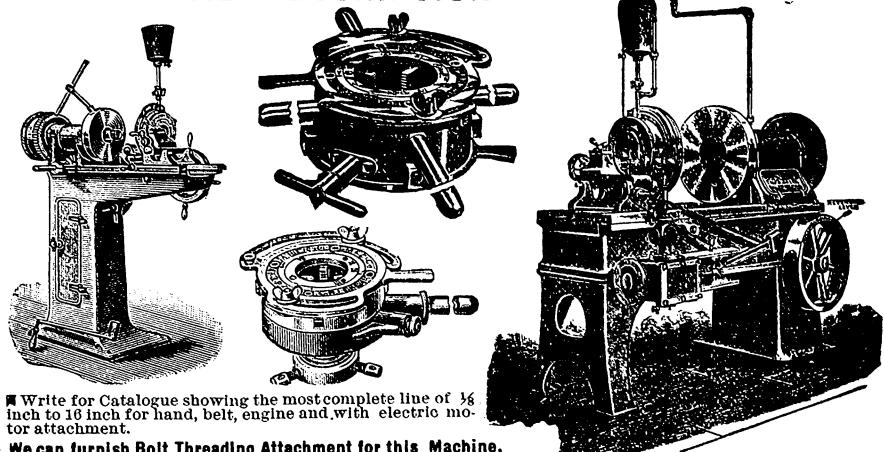
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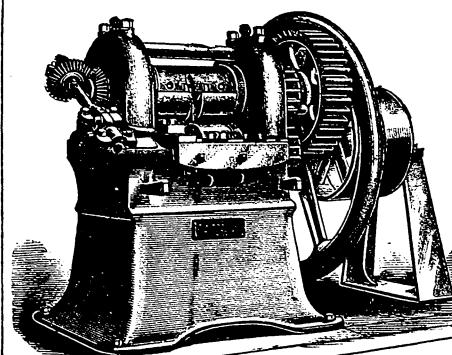
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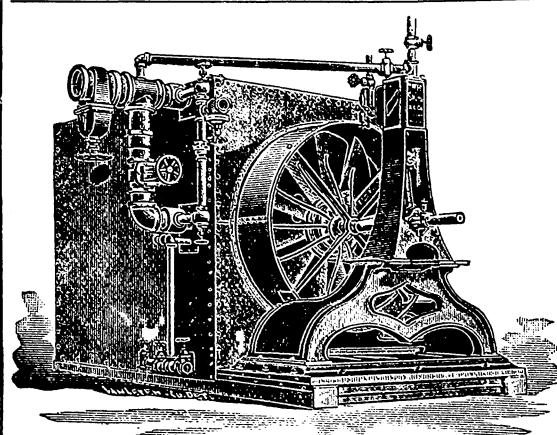
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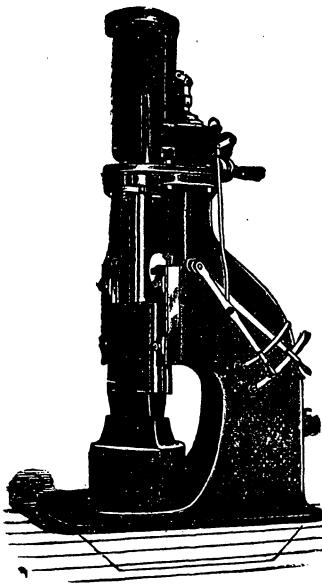
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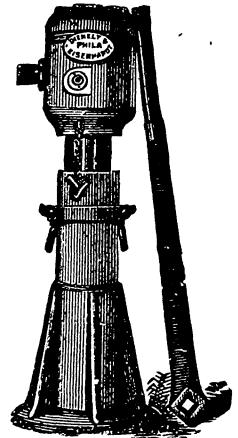
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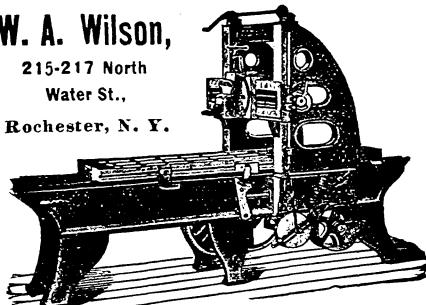
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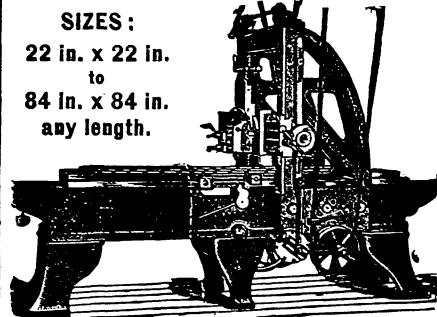


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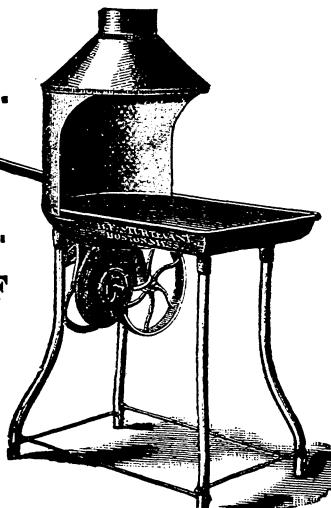
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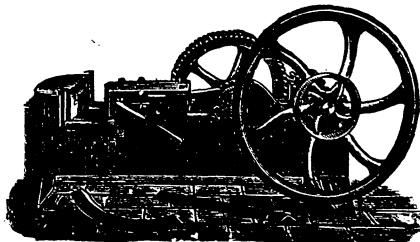
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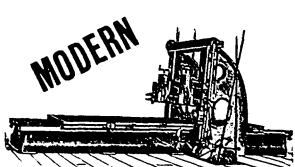
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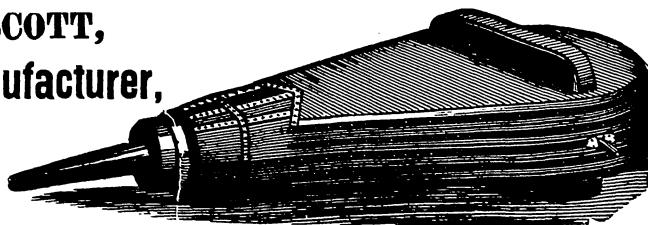
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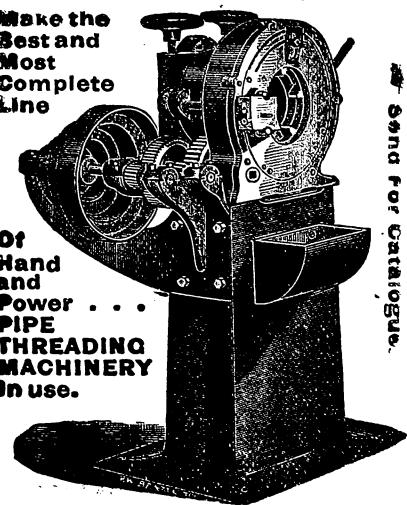
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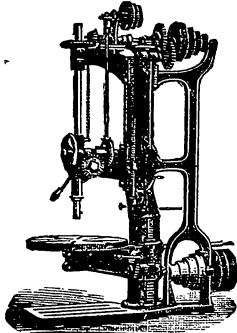
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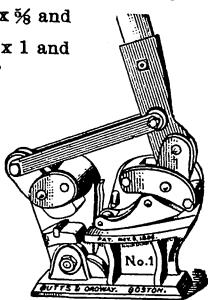
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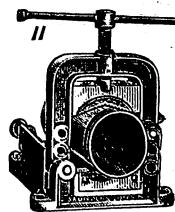
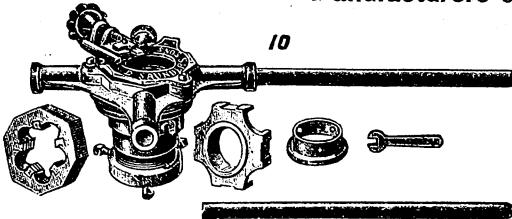
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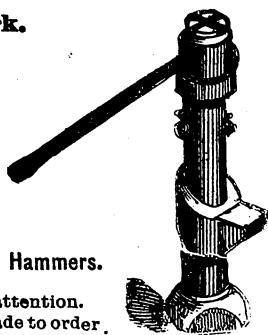
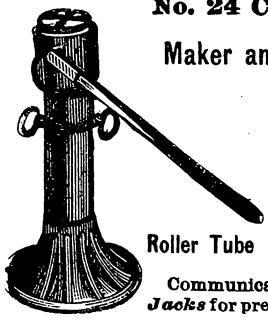
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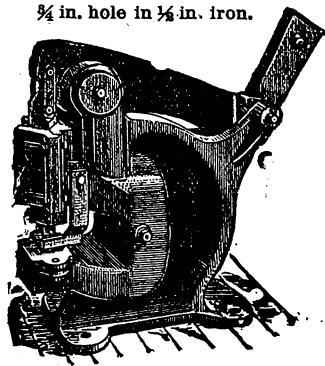
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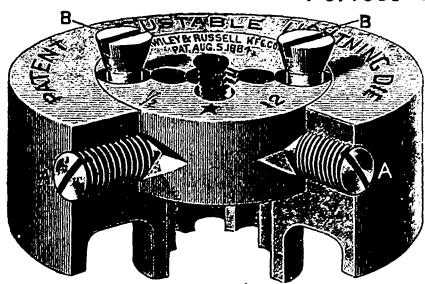
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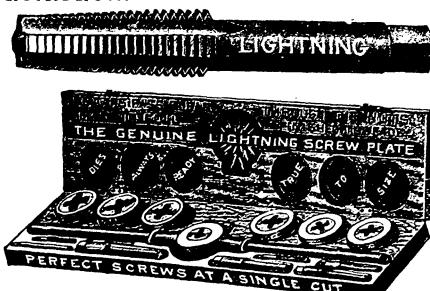
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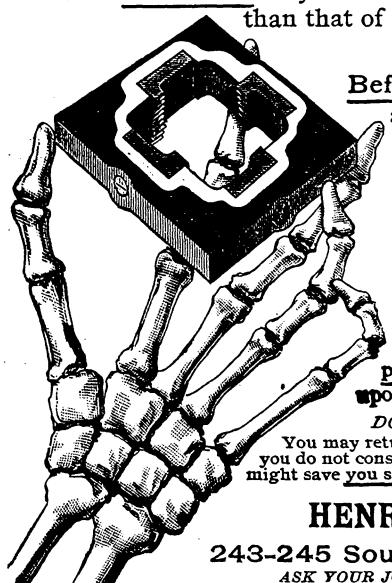
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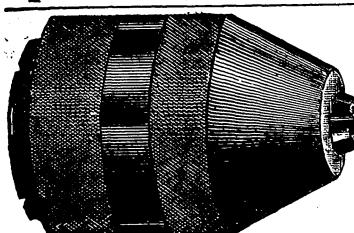
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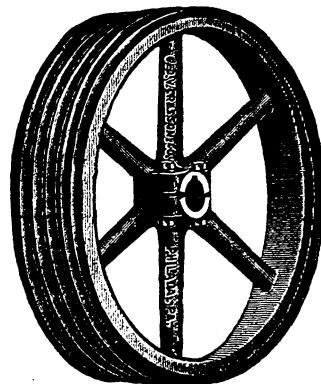
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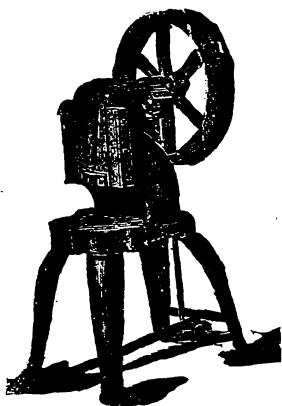
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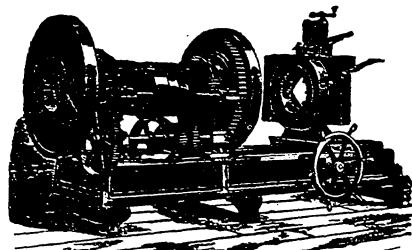
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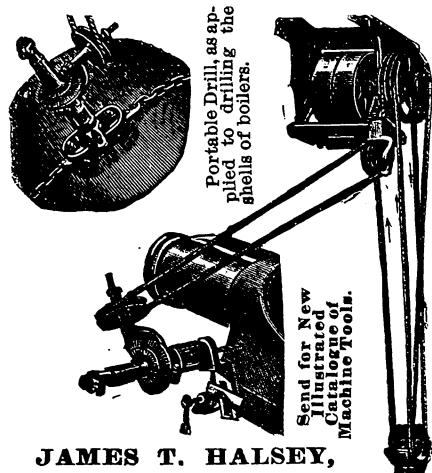
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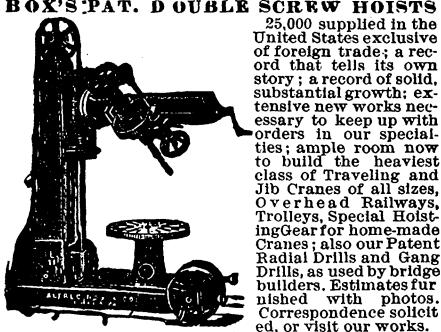
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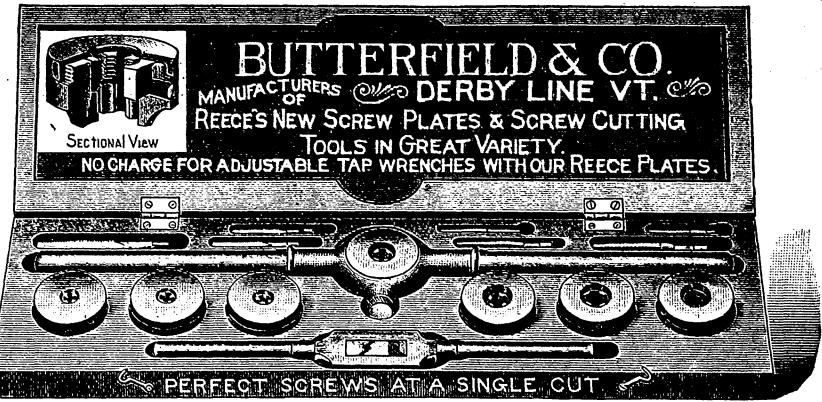


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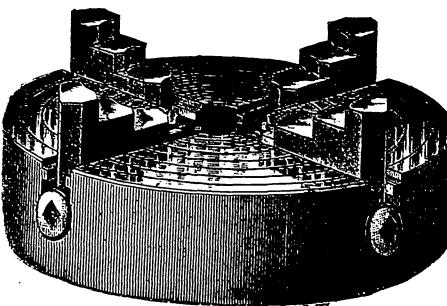
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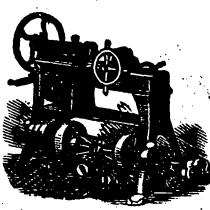
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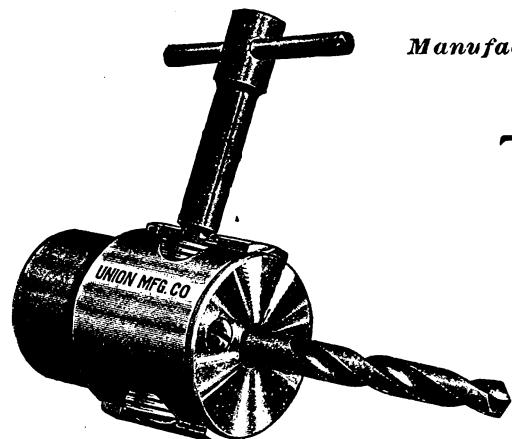


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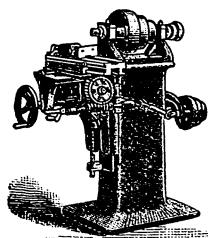


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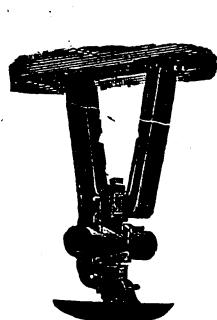
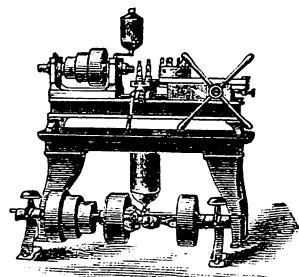
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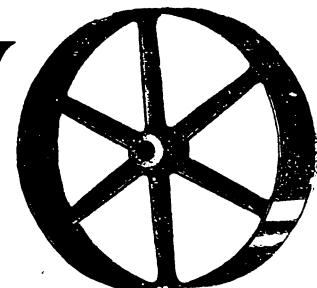
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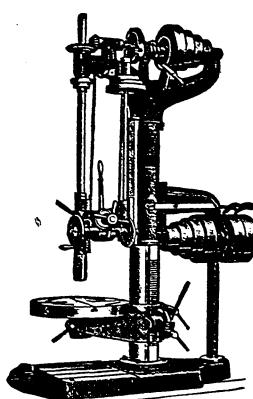
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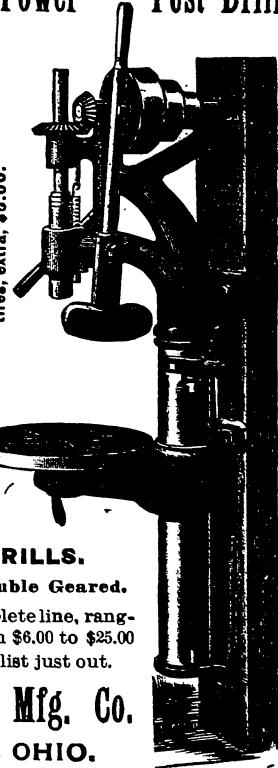


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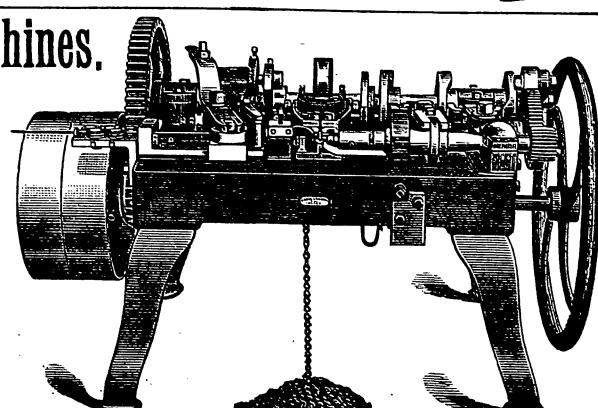
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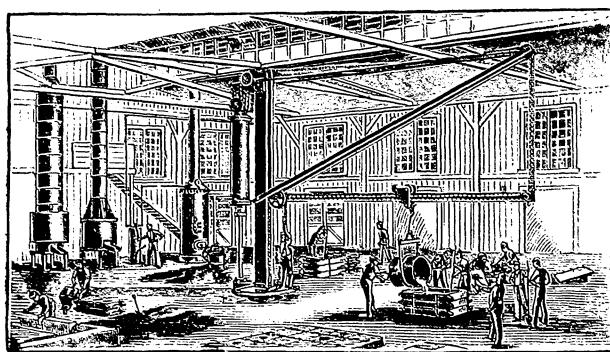


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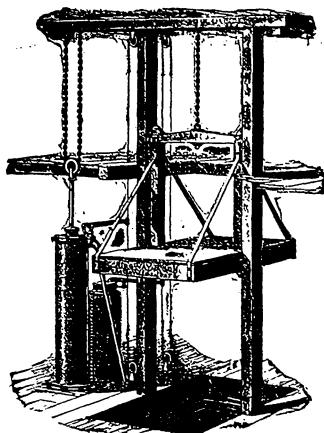
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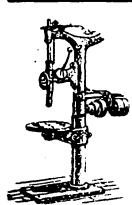
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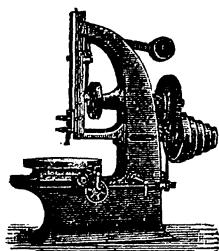
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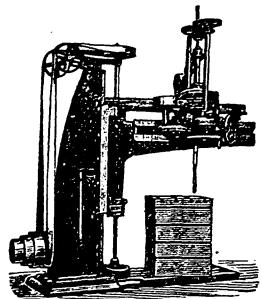
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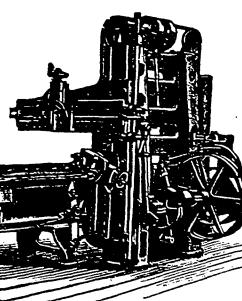
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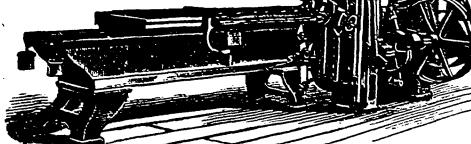
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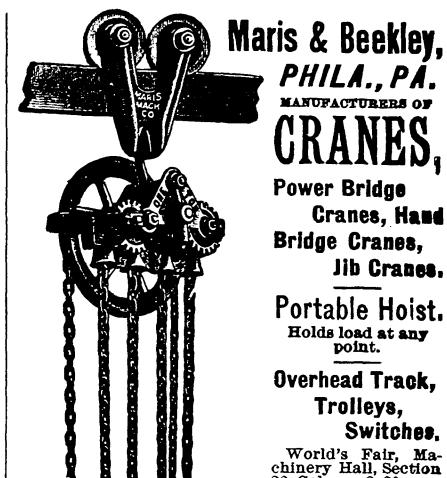
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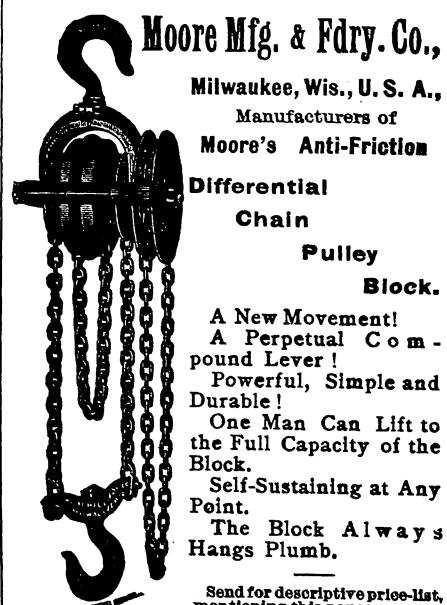


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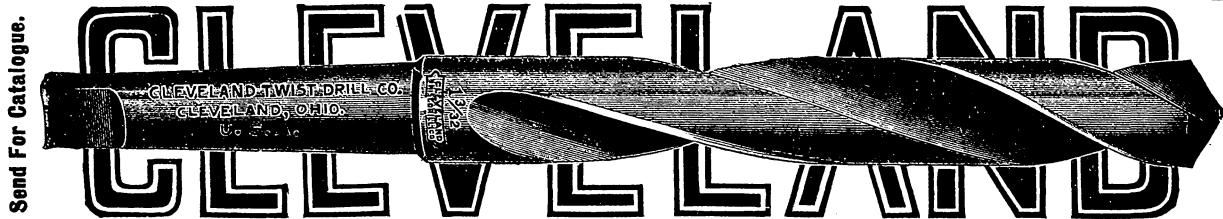
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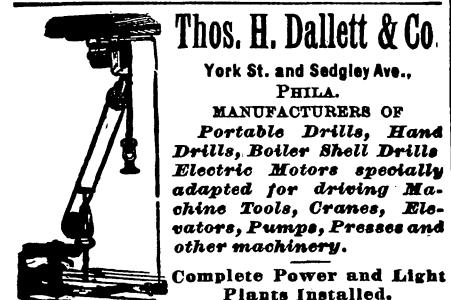
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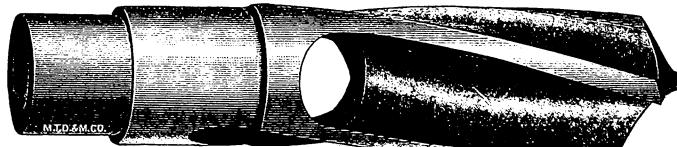
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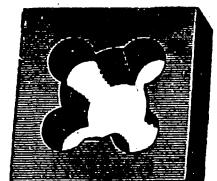
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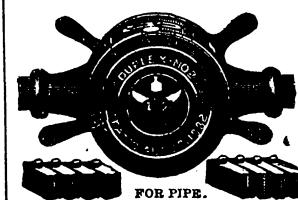


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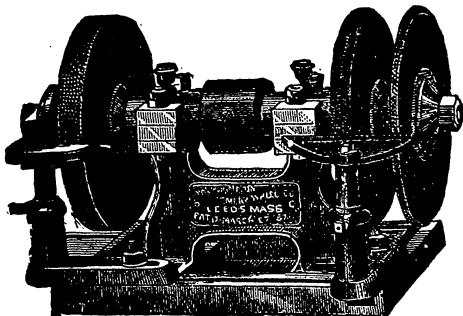
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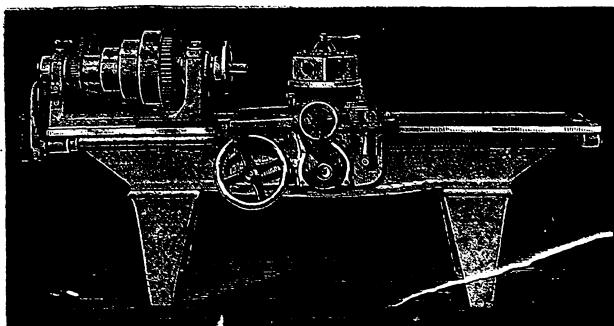


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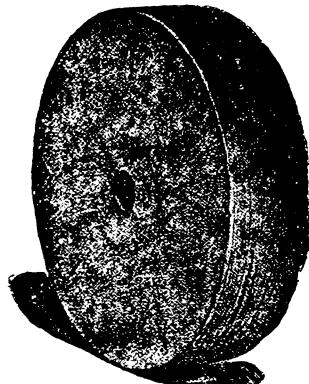
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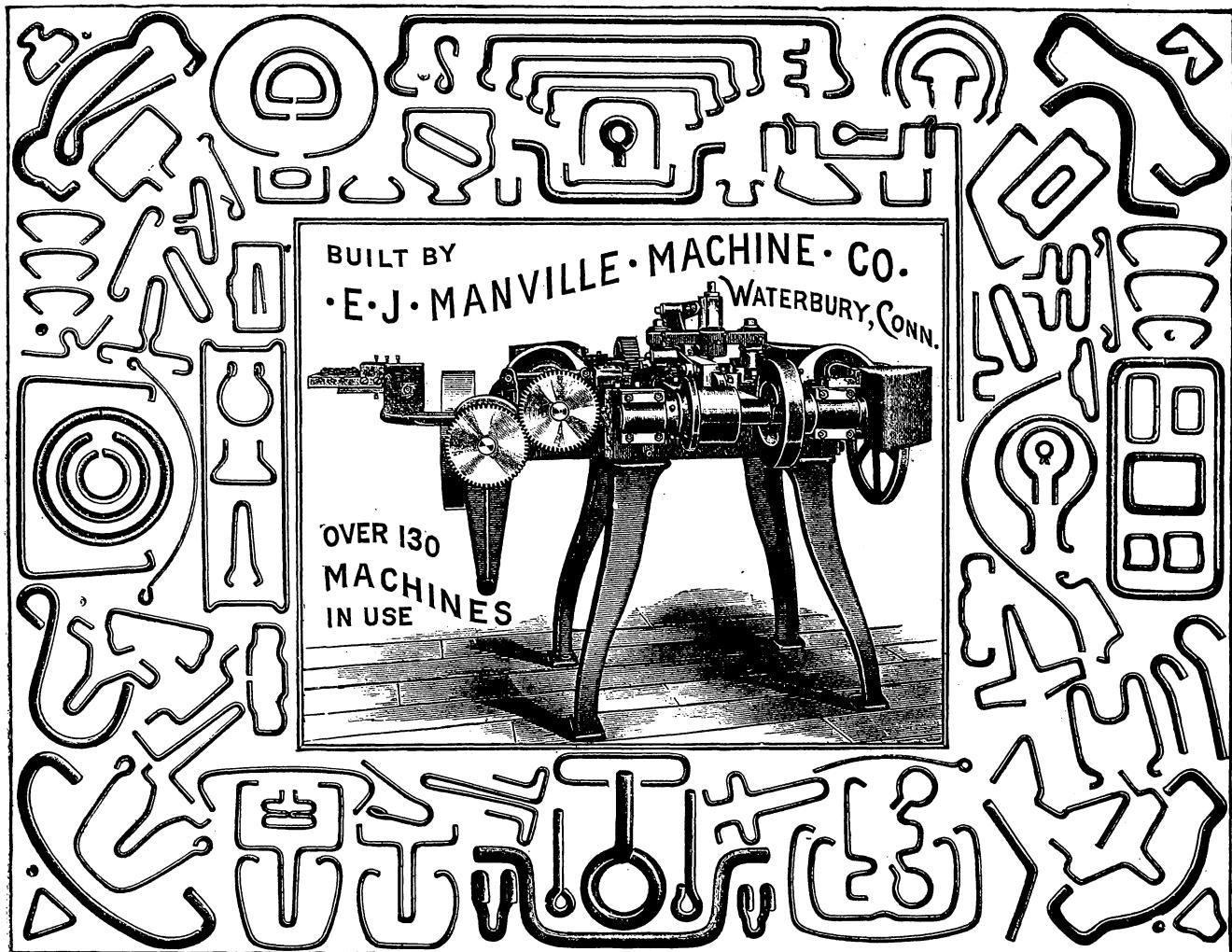
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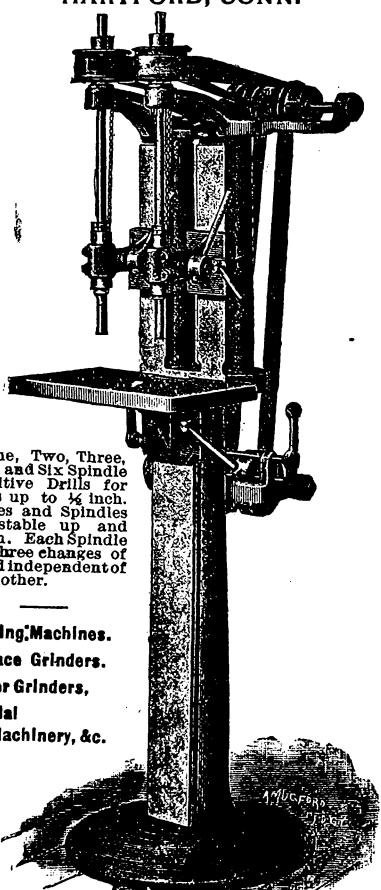
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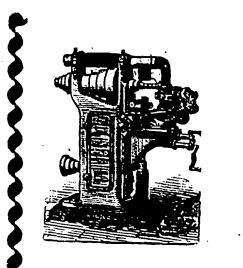
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BY A BOOKKEEPER of over 20 years' experience, a position as bookkeeper and cashier with a first-class wholesale house; best of references. Address "E. B.," Box 306, N. Y. P. O.

BY A CUTLERY SALESMAN who has traveled many years representing some first-class houses in pocket and table cutlery, imported hardware, chains, etc.; well known to the jobbing trade throughout the United States; will be open for an engagement after January 1st; references unexceptionable. Address "W. H. G.," No. 1221, office of *The Iron Age*, 96-102 Reade St., New York.

WHERE MY BUSINESS experience of several years in steel and iron and railroad supplies can be utilized to mutual advantage. Address "MAN," office of *The Iron Age*, 220 S. 4th St., Philadelphia, Pa.

BY A CHEMIST of many years' experience at steel works and blast furnaces; familiar with calculation of burdens, etc.; furnace work preferred; references the best. Address "FURNACE," No. 1214, office of *The Iron Age*, 96-102 Reade St., New York.

BY SUCCESSFUL Stamping Works Superintendent, thorough machinist, die maker; large experience laying out plans, starting and running new works, designing, building, labor saving tools and machinery; Al manager of men, factory or machine shop; controls stamped article, pays good profit to manufacturer; best reference. Address "STAMPING," office of *The Iron Age*, 96-102 Reade St., New York.

BY A YOUNG MAN with experience, a position as clerk, in hardware store doing a good paying business, with privilege of buying part or whole of same at end of the year. Address "MELLER," office of *The Iron Age*, 96-102 Reade St., New York.

HAVE BEEN WITH large iron company seven years, and can show excellent letters; experienced as a chemist, as melter, foreman and assistant superintendent at open hearth; could take charge of laboratory or open hearth; also experience at blast furnaces; glad to hear any proposition for fresh engagement. Address "E. G. R.," office of *The Iron Age*, 96-102 Reade St., New York.

AGENTLEMAN who has had over 25 years' experience in hardware and kindred lines, and who also has had a thorough business training in accounts, finance, etc., desires to secure a position as representative in New York City of a manufacturer of hardware, metals, iron, etc., or to serve in any capacity where he may be useful; unqualified references furnished. Address Box No. 1214 A., office of *The Iron Age*, 96-102 Reade St., New York.

TO REPRESENT MANUFACTURERS of hardware; have an intimate acquaintance with all the large buyers of the Northwest, West, South and East, with the exception of New England States; have had many years' experience and can furnish first-class references. Address "NORTHWEST," office of *The Iron Age*, 59 Dearborn St., Chicago.

SPERINTENDENT OR CHIEF ENGINEER, by a mechanical engineer of 15 years' experience in general engineering, hydraulics, cranes, sheet, plate and structural iron work, etc.; any one who wants an energetic man to look after his interests will answer this ad. "HUSTLER," office of *The Iron Age*, 96-102 Reade St., New York.

BY A YOUNG MAN capable of earning \$2000 per year, as manager or assistant; has thorough knowledge of the rolling mill business, both East and West, and is a hustler. Address "IRON MAN," office of *The Iron Age*, 96-102 Reade St., New York.

BY MIDDLE AGED MARRIED MAN; has had 14 years' experience as bookkeeper, special accountant, etc., keeping cost sheets of various articles manufactured in machine shop, boiler shop, foundry and wire mill works; thoroughly understands the business details. Address "CLERICAL," office of *The Iron Age*, 96-102 Reade St., New York.

WOULD LIKE to secure position with manufacturer of hardware or commission hardware house as representative on road or house position; having been a number of years in the business, with a road experience of six years, feel confident I can make myself valuable to any company; can furnish excellent references. Address "ENERGY," P. O. Box No. 182, Baltimore, Md.

AGENTLEMAN with an extensive experience in engineering and manufacturing, and highly skilled in designing, estimating and contracting, production and cost sheets, technical and business correspondence, management, &c., is free to consider a responsible engagement; if desirable can take up some stock. Address "WELL QUALIFIED," office of *The Iron Age*, 96-102 Reade St., New York.

A MEMBER OF AMERICAN SOCIETY of Mechanical Engineers, who has had 20 years' practical experience as follows: mechanist, head draughtsman, erector of steam plants, engineering, estimating, contracting and office work and superintendent of large engine works, available for responsible position. Address "A. B. C.," office of *The Iron Age*, 59 Dearborn St., Chicago.

BY AN EXPERIENCED HARDWAREMAN, ten years' experience, three years' on the road; good salesman and stock keeper; West or Southwest preferred; best of references. Address L. W. VIVION, Benton City, Mo.

AWELL KNOWN and successful Blast Furnace Superintendent or Founder will be open for engagement after Oct. 1st, 1893. Is thoroughly competent as constructor or in the management. Practical, theoretical and in touch with latest improvements in blast furnace practice. First-class record and references. Address "BLAST FURNACE," No. 921, office of *The Iron Age*, 96-102 Reade street, New York.

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*Undisplayed Advertisements for
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words One Dollar each insertion.
Additional words two cents each.*

ASUPERINTENDENT of forge works, thoroughly experienced, capable of taking charge of 125 men; must bring references showing past employment and character. Address "FORGE WORKS," office of *The Iron Age*, 96-102 Reade St., New York.

SALESMAN with experience and trade in hardware and cutlery in New York and Penna. Address, with references and full particulars, "TRADE," No. 1221, office of *The Iron Age*, 96-102 Reade St., New York.

TRAVELLING SALESMEN to take as a side line, and good local canvassers to sell, a line of the best wire specialties now made; good commissions paid; only first-class, experienced and well recommended men need apply; references required. Address PEERLESS WIRE MFG. CO., Beaver Falls, Pa.

AT A POINT in New Jersey, a chief engineer of experience to take charge of a large power plant of compound and triple expansion engines; must be a practical mechanic, thoroughly familiar with the theory and practice of modern engineering; full references must be given, salary required, and time when applicant could accept position must be stated. Address "BARBETTE," office of *The Iron Age*, 96-102 Reade St., New York.

SALESmen visiting hardware trade to sell as a side line on commission our Unique Self Heating Hair Curler; it sells equally as well to following dealers: Druggists, Jewelers, Bazaars, Dry Goods, News Stands, etc. Address, with references, UNIQUE NOVELTY CO., 99 to 103 Abbot St., Detroit, Mich.

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AN INTELLIGENT, ENERGETIC young man, familiar with machinery, boilers and engines, to assist in general repair work, and to aid in constructing special machinery; steady employment; wages, \$2.50 per day. Address, giving full particulars and references, "L." care Letter Carrier No. 9, Black Rock, Buffalo, New York.

SALESMAN in every large town to sell a staple line of hardware on commission. Address "EDWARDS," care E. S. Adams, office of *The Iron Age*, 312 The Cuyahoga, Cleveland, Ohio.

SALESmen to sell on commission to the hardware, plumbing and rubber trade the best and cheapest line of lawn sprinklers made; see advertisement in this paper. Address ETHE & HENGER MANUFACTURING CO., St. Louis, Mo.

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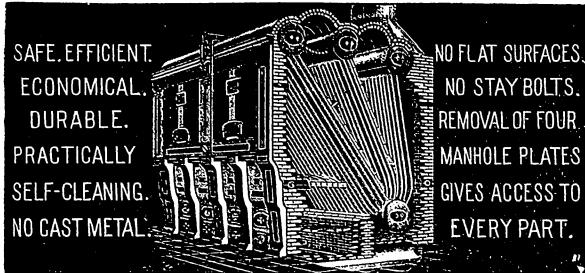
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An address to the Institute of Accounts, New York, of which the writer is a member, put in form to assist those in charge of manufacturing accounts. Practical forms are included for a series of order books, examples of foreman's order, form of pay-roll, quarter-time book, job time book, form of summary, charges book, summary of costs, material, labor, cash, expense, manufacturing and improvement acts, store-room, iron foundry, brass foundry.

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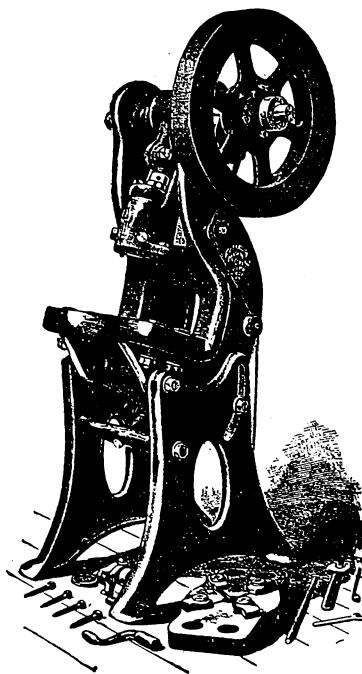
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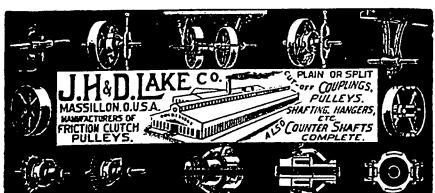
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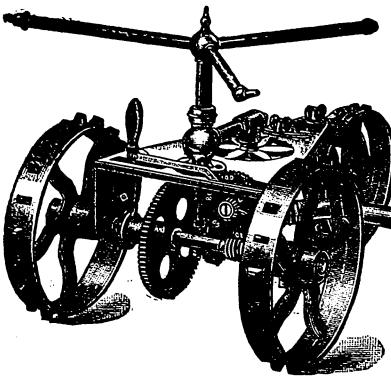
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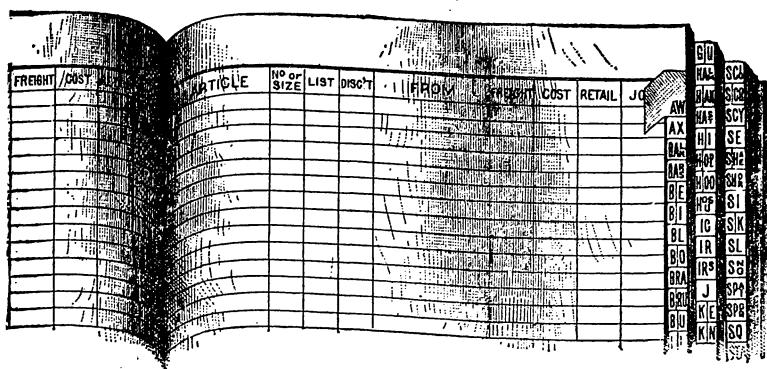
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The Iron Age Hardware Price Book E.

SECOND EDITION, REVISED AND ENLARGED, WITH MULTIPLE INDEX (Patent Pending).



AD	GU	SC ¹
AN	HAL ^M	SCR
AU	HAN	SCY
AW	HAT ^S	SE
AX	HI	SH ^E
BAL ^N	HOP ^L	SH ^R
BAR ^S	HOO	SI
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Fac-Simile of Indexing.

SIZE.—The book is 7 x 10 inches (much larger than Price Books A, B, C, or D), 350 pages.

PAPER.—The paper is the celebrated Crane's heavy ledger paper, tough and strong, permitting frequent changes and erasures.

BINDING.—The binding is of the very best quality—flexible seal grained leather.

INDEX.—By means of the arrangement shown in the cut the index applies to every page (except Supplement) and permits reference to any article at a single motion. This greatly facilitates the use of the book, avoiding the troublesome turning from page to page which is necessary in connection with other Price Books. It has been prepared with great care, and it is believed that it provides a place for every article in the Hardware line.

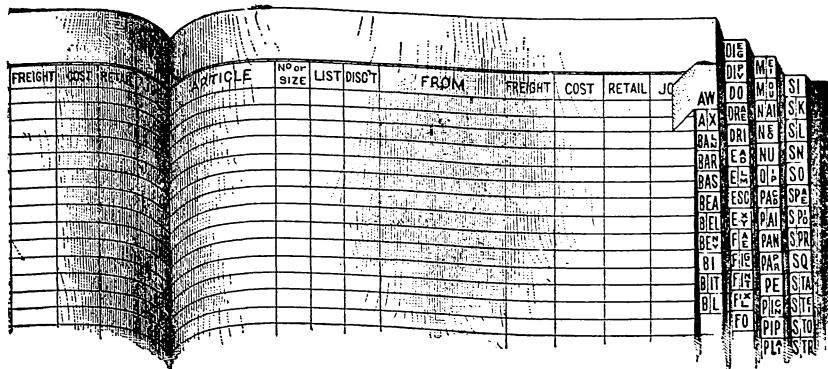
ARRANGEMENT.—The book is arranged to keep a complete record of prices on a single page, the width giving sufficient room.

SUPPLEMENT.—A 40-page Supplement is provided to give room for supplemental quotations, memoranda, tables, &c.

THIS BOOK IS ISSUED IN ONLY ONE EDITION, PRICE, \$5.00.

The Iron Age Hardware Price Book F.

WITH MULTIPLE INDEX (Patent Pending).



AD	DIE ^E	ME ^E	SI
AN	DIP ^V	MO ^U	SK
AU	DO	NAI	SL
AW	DRE ^E	NE ^O	SN
AX	DRI	NU	SO
BAL ^N	E ^A	O ^P	SPE
BAR	E ^M	PAC ^D	SP ^O
BAS	ESC	PAI	SPR

Fac-Simile of Indexing.

SIZE.—The book is 8 1/4 x 11 inches (much larger than Price Books A, B, C, D or E), 556 pages.

PAPER.—The paper is the celebrated Crane's heavy ledger paper, tough and strong, permitting frequent changes and erasures.

BINDING.—The binding is of the very best quality—flexible seal grained leather.

INDEX.—By means of the arrangement shown in the cut the four rows of index applies to every page (except Supplement) and permits reference to any article at a single motion. This greatly facilitates the use of the book, avoiding the troublesome turning from page to page which is necessary in connection with other Price Books. It has been prepared with great care, and it is believed that it provides a place for every article in the Hardware line, and gives ample space for recording prices.

Sufficient space has been provided for large lines of goods such as Axes, Bits, Springs, etc., by allowing four pages to such indices, instead of two pages, as for lines of goods requiring less space. This is accomplished, as in AX for example, in Book F by having a short tab with the letter A on the tab on the first leaf, and AX on the tab on the second leaf. The A on the first leaf is directly over the A on the lower leaf, so that the index reads AX whether looking at both leaves together, or at the lower one only.

The four rows of index tabs are printed in gold letters on black Russia leather. The tabs are securely fastened on both sides of each page, making a handsome and durable index.

ARRANGEMENT.—The book is arranged to keep a complete record of prices on a single page, the width giving sufficient room.

SUPPLEMENT.—An 80-page Supplement is provided to give room for supplemental quotations, memoranda, tables, &c.

THIS BOOK IS ISSUED IN ONLY ONE EDITION, PRICE, \$7.50.

Advantages of Multiple Index Price Book.

A SPECIAL feature of the books is the arrangement of the index characters, which, instead of being alphabetical, are arranged with special reference to the classification of Hardware goods, each index character giving the first two or three letters of the names of Hardware articles as shown above. The ease and convenience with which the books can be used is indicated in the following examples, taken from Book F:

For Augers,	turn to AU	For Chisels,	turn to CH ^U	For Iron,	turn to IRO
" Parers, Apple	" PAR	" Cutlery,	" CUT	" Irons,	" IR'S
" Saws,	" SAW	" Cartridges,	" CAR	" Shovels,	" SH ^R
" Pumps,	PUM ^N	" Rules,	RUL ^B	" Grindstones,	GRI
" Bits,	BIT	" Locks,	LO	" Stones,	STO

Special care has been taken to make the classification as indicated in the index correct and comprehensive, making provision for all Hardware articles and giving sufficient space for the keeping and recording of prices. It is thought that every strictly Hardware article has its first two or three letters given, thus permitting immediate reference to it by a single motion.

It is, however, obvious if any articles are not directly designated by the index characters, that the index, being alphabetical in its arrangement, indicates the place where quotations on such articles should be recorded. The supplement, however, may be found useful for quotations on any outside goods which the Hardwareman may desire to keep prices on, while at the same time it may be used if necessary for any overflow of matter from the preceding pages, or to contain list prices or other matter relating to goods.

Hardware Classification.—A pamphlet containing a classification of the leading Hardware articles is furnished with the price books.

Standard Lists.—In connection with these price books a set of *The Iron Age* STANDARD HARDWARE LISTS can be used with great advantage. Price 25 cents.

These price books, which have been prepared by R. R. Williams, Hardware Editor of *The Iron Age*, are presented to the attention of Hardware men in the confidence that they will be found a most valuable aid in keeping track of prices.

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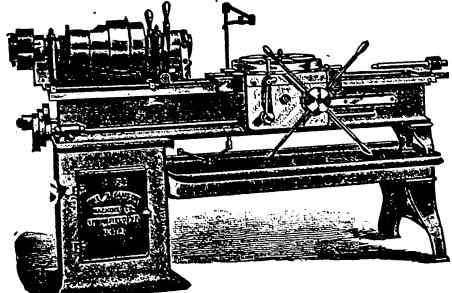
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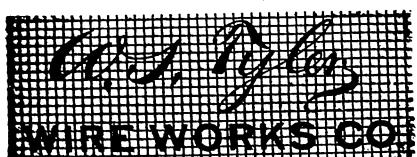
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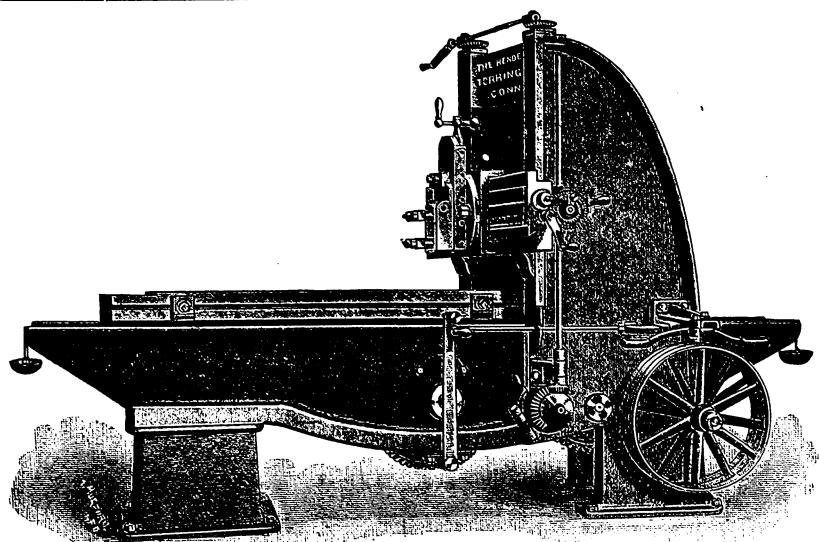
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Complete Machine securely packed in one single package.
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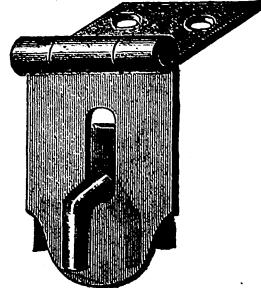
NORTH BROS. MFG. CO.,

Manufacturers of Hardware Specialties for Household use
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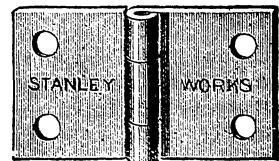
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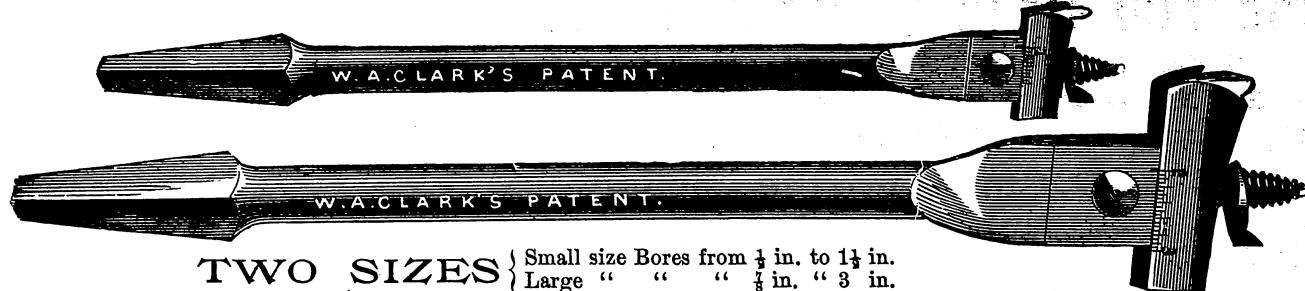
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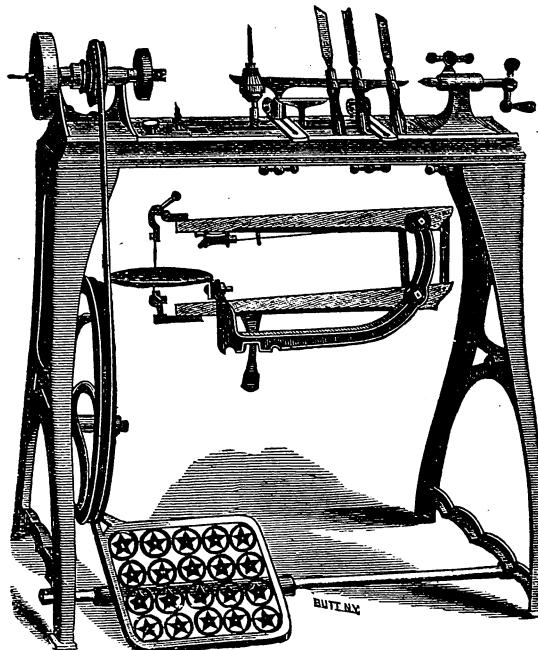
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Many kinds of Scroll Saws have been put on the market by ourselves and other manufacturers during the past twelve years. Of these only a few have proved good enough to remain in demand. The call now is for a well-made, practical machine, and all second-class ones are of slow sale.

Those who want a good Lathe with Scroll-Sawing Attachment and all Tools and Improvements to the very latest moment will buy the Goodell Lathe.

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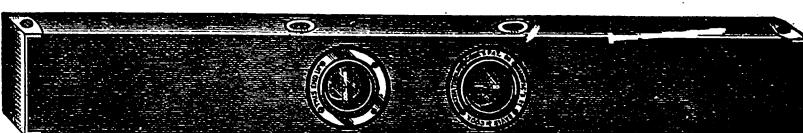
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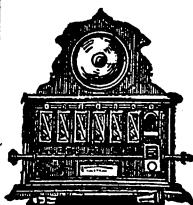


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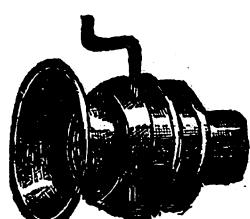
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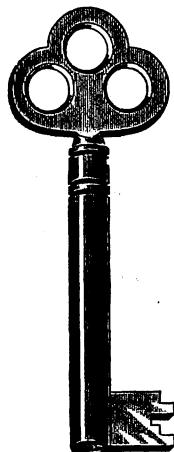
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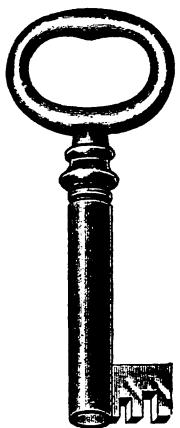
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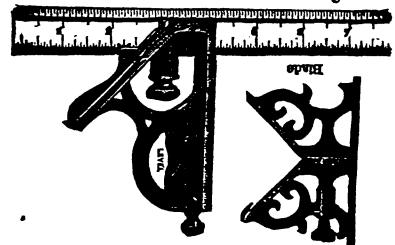
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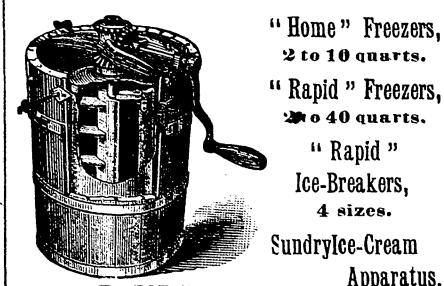
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Fig. 881.

Fig. 145.

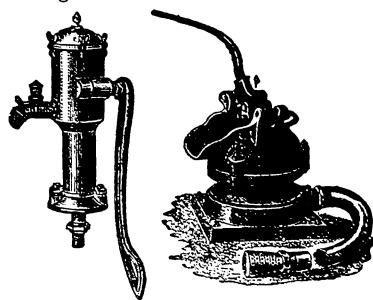
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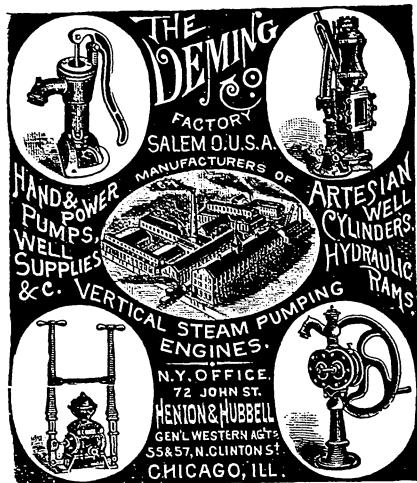


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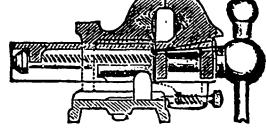
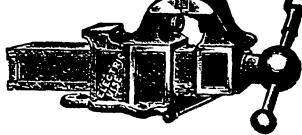
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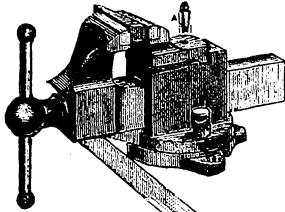


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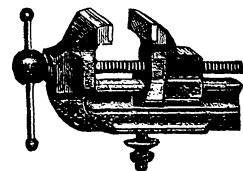
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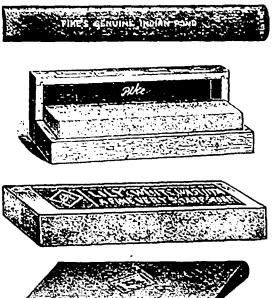


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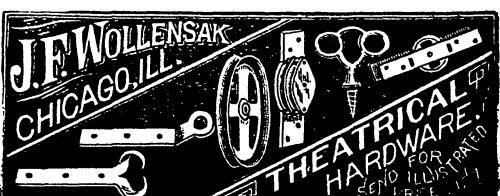
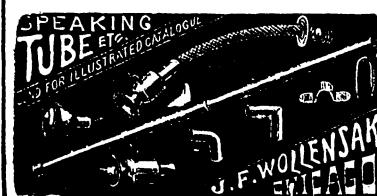
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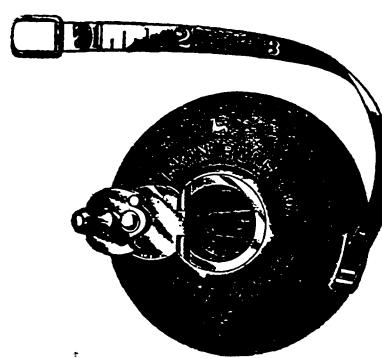
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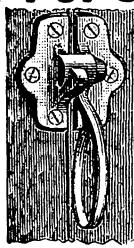
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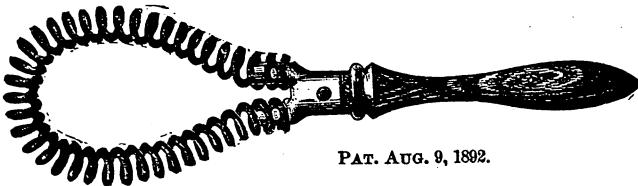
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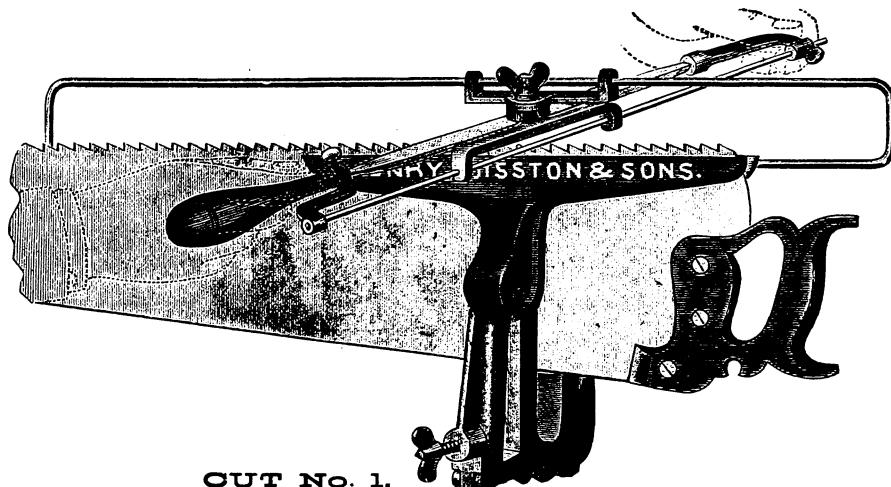
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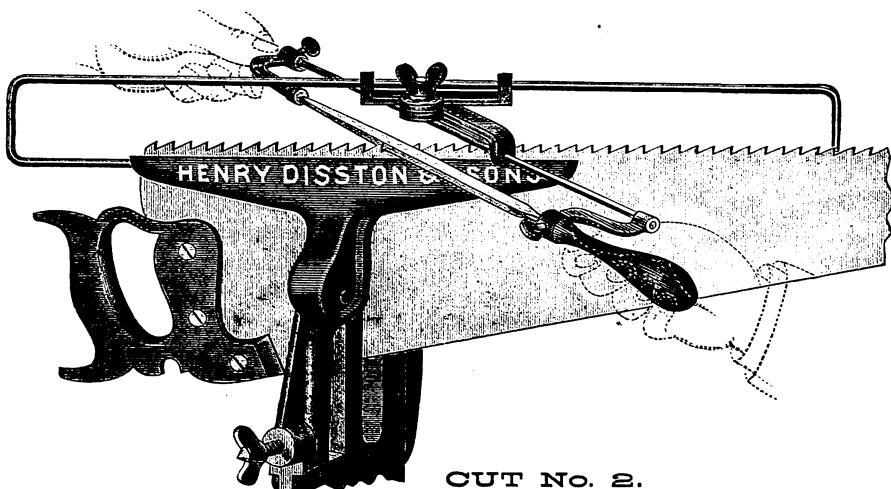
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ESPECIALLY DESIGNED TO ASSIST THOSE NOT SKILLED IN THE ART OF SAW FILING TO FILE A SAW CORRECTLY.



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Cut No. 1 shows a saw and the attachment in proper position for filing the first side ; and Cut No. 2 shows the saw and attachment reversed and in position to file the second side. There are three marks on one of the hubs of the swivel attachment, and one mark on the other. One of the three marks shows when it is in position No. 1, and the other designates when it is in position as shown in No. 2. The third, or centre, marks show when it is in position for filing Rip Saws.



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To obtain the correct position, loosen the wing nut and move the guide around to the point desired ; after tightening wing nut, loosen screw in file handle, then turn handle until file gives the shape tooth wanted.

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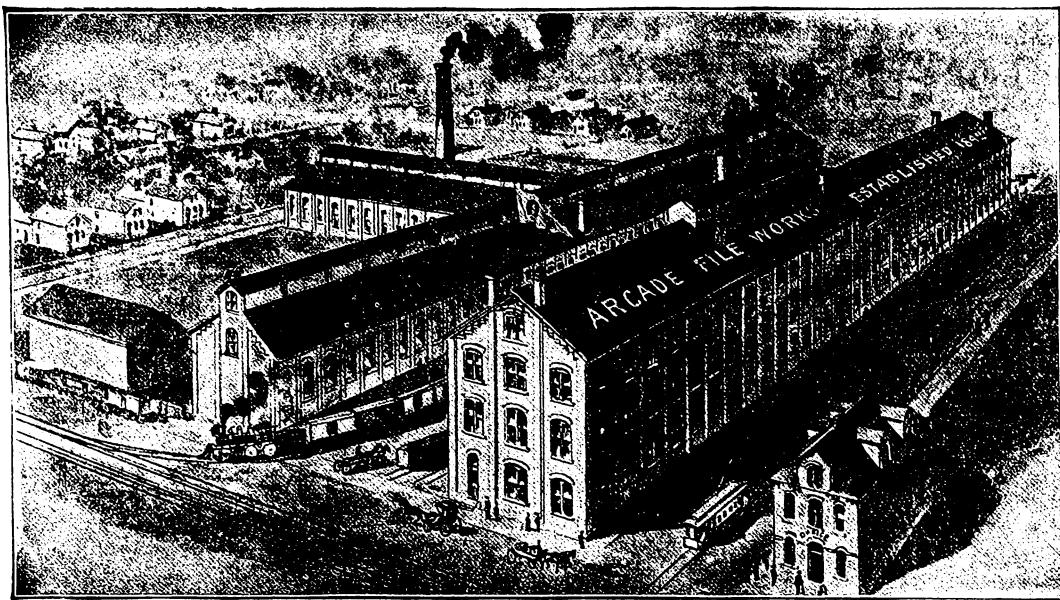
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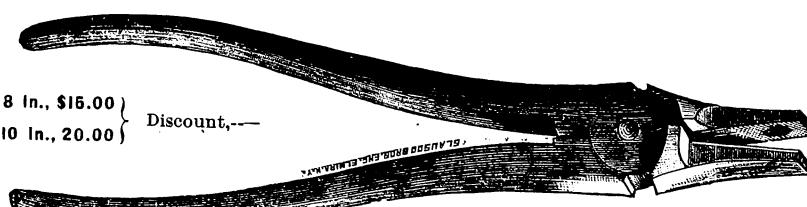
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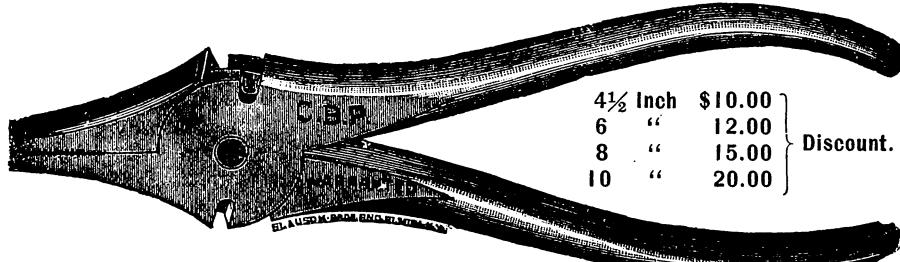
THIRD.—The cupping in the Nose is used for pulling tacks, brads or nails, and can also be used in place of Hill's Hog Ringer.

FOURTH.—We can cut Barbed Wire, Barb Belt or any kind of Wire used for Fencing purposes.

We also claim that we have the only Plier made that the Cutting Jaws cannot be broken.

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What we claim for this plier is that it is made from best quality tool steel and is made heavier and stronger than any plier of its kind in the market and the finish is first-class. Also they are made so the jaws are parallel when used on wire from 9 to 14 gauge and will hold the wire solid.

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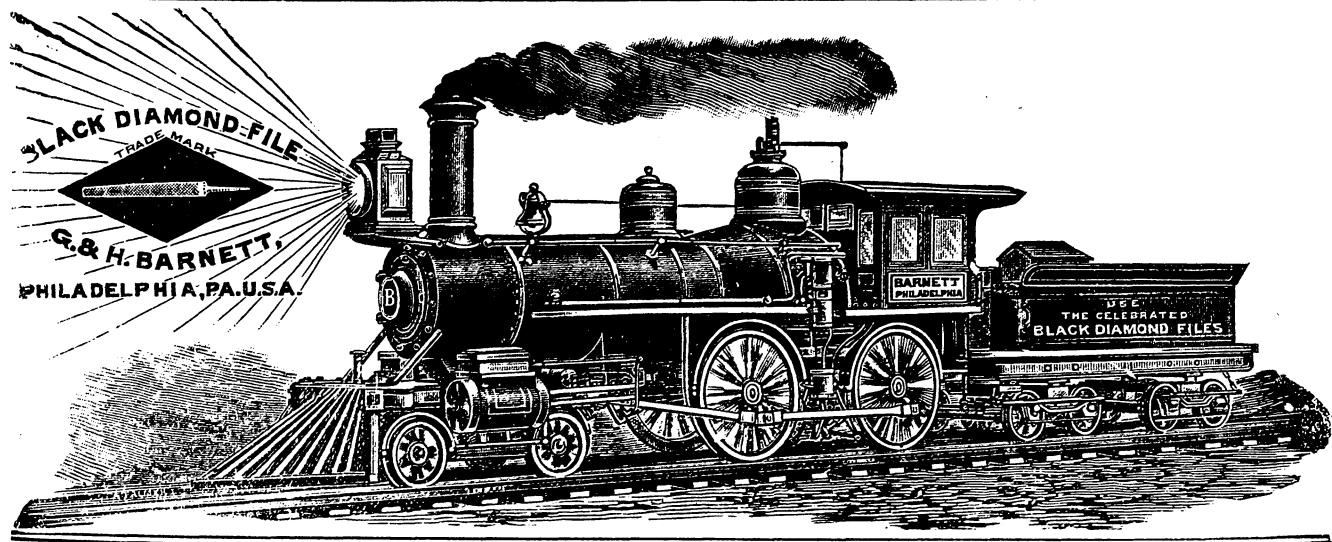
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Adapted to general use; also to the special use of boring and screw-driving in Angles, Corners, close to Washboards and Walls, and in all places difficult or impossible to reach with the ordinary Brace.

6, 7 and 8 inch SWEEPS.

Unequalled as a Corner Brace.

The crank-arm revolves at right angles to the bit.

The frame is readily and firmly held in any desired position with one hand.

The thrust of the tool is directly in the line of the bit.

The operation is familiar, natural and convenient.

All parts are simple and durable

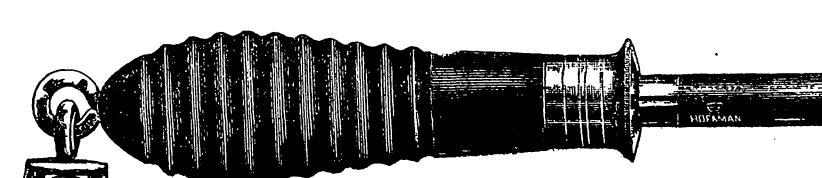
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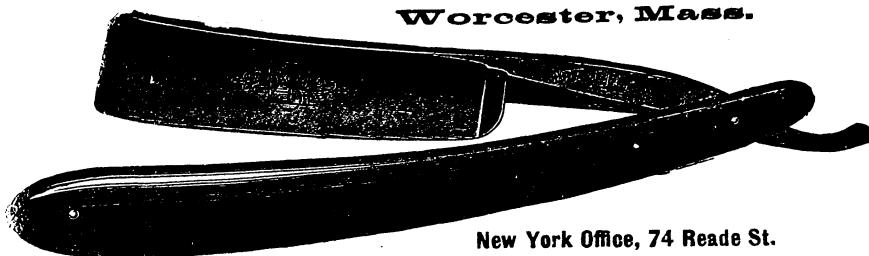


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THE STANDARD.



BUCK BROTHERS,
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The Most Complete Assortment in the U. S. of
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Buyers are cautioned against any parties who claim a recent connection (or any connection for over 20 years) with Buck Bros., or who represent goods as our make not stamped with the BUCK'S HEAD or BUCK BROTHERS in full.

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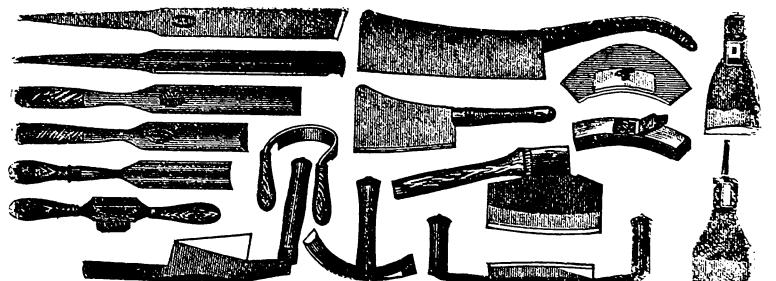
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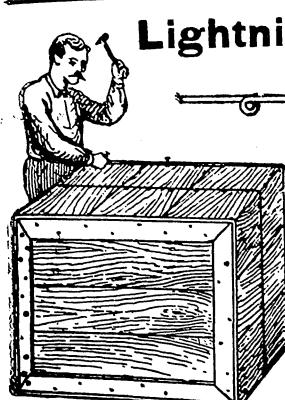
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Mounted on reels and always ready for use and convenient to handle. Easily and quickly binds shipping cases and crates in a neat, strong and substantial manner.

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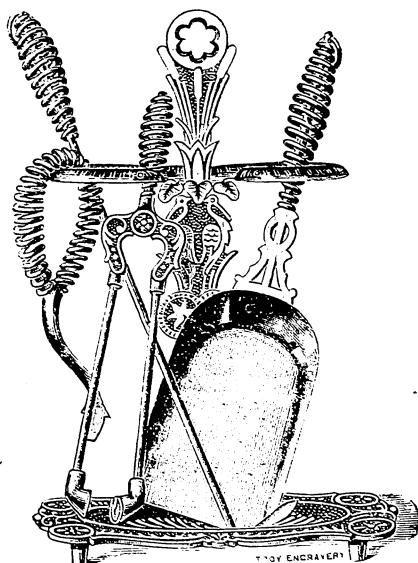
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Stove Trimmings.
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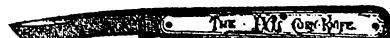
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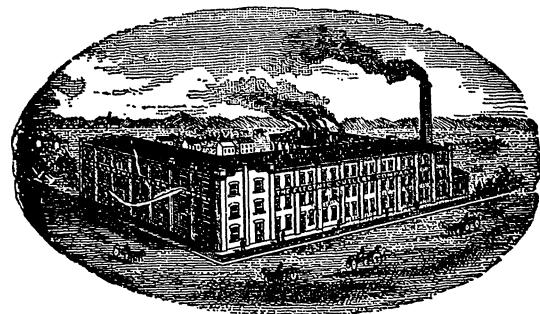
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Knives or Razors,
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The Best Equipped Cutlery Works in the World.



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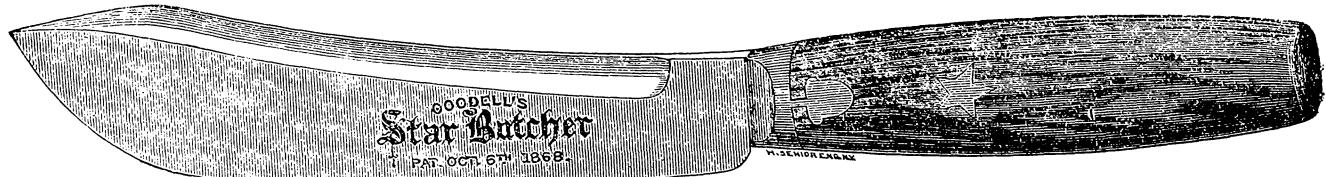
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TABLE CUTLERY, BUTCHERS' CARVERS, PLATED GOODS, &c.

Send for Revised Catalogue.

**THERE IS NOTHING NEW
TO SAY ABOUT THIS KNIFE EXCEPT
IT IS GROUND SHARP**



WE DON'T KNOW HOW TO IMPROVE IT.

Blade is made of steel especially prepared for the purpose, and it is made just right; finish excellent; shape unsurpassed; the handle just fits the hand.

GENERAL APPEARANCE IRREPROACHABLE.

Made in sizes from 5 inch to 8 inch; a strictly first-class butcher knife at a moderate price.

WE HAVE OTHER BUTCHER KNIVES,

4½ to 14 inch blade, that will cut as well, for less money. Also Table Knives and Forks, Carvers, Butcher Steels, Bread Knives, Cheese Knives, Butter Spades, Apple, Kitchen, Putty, Cigar, Shoe Knives, &c., &c., in great variety. We aim to make the best and sell at reasonable prices.

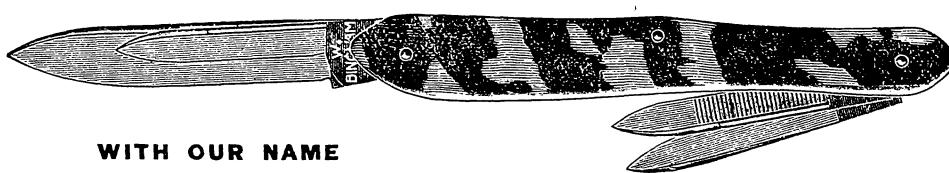
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**IS THE BEST
THE W. BINCHAM CO., Cleveland, O.**

That money
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Edge Tools
Hammers
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outs, Kennel Chains, &c.; also cut to lengths for manufacturers' use.
The cut represents the exact size of 6/0.

Thirteen Sizes made, 6/0 being the Largest.

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Chain, made into Halters
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Face in one piece of BEST TOOL CAST STEEL, PERFECTLY WELDED, perfectly true, of hardest temper, and never to come off or "settle." Horn of tough untempered steel, never to break or bend. Only Anvil made in the United States fully warranted as above.

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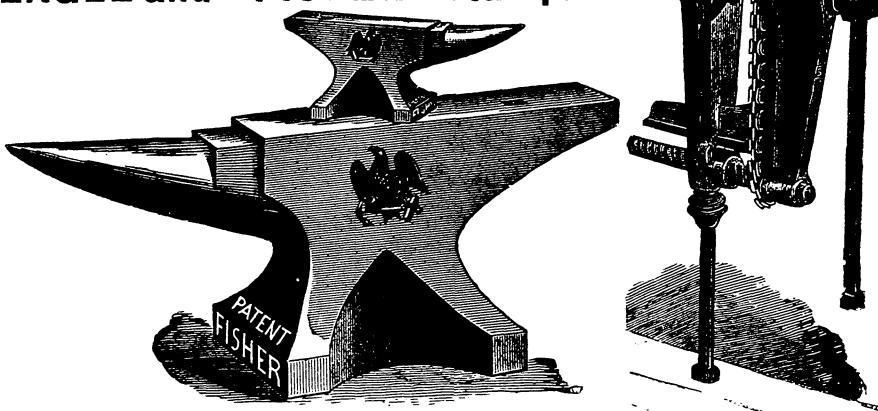
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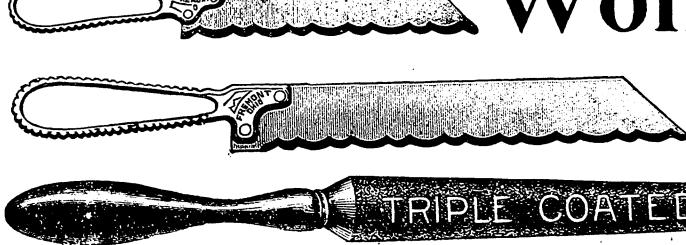
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Cuts any Fraction of an inch by Eighths.

Unequalled for accuracy and quick work in cutting square or at any angle. Saves breakages, &c.

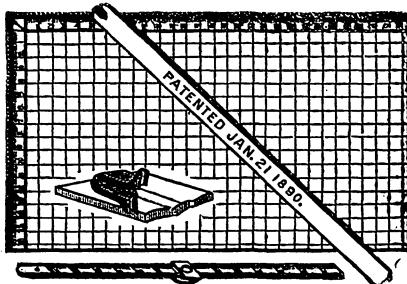
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From 3 inches up to 48 inches, Segments, Gothic Shapes, &c.

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Machine Knives, Shear Blades,
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LIGHTNING DRAIN CLEANER.

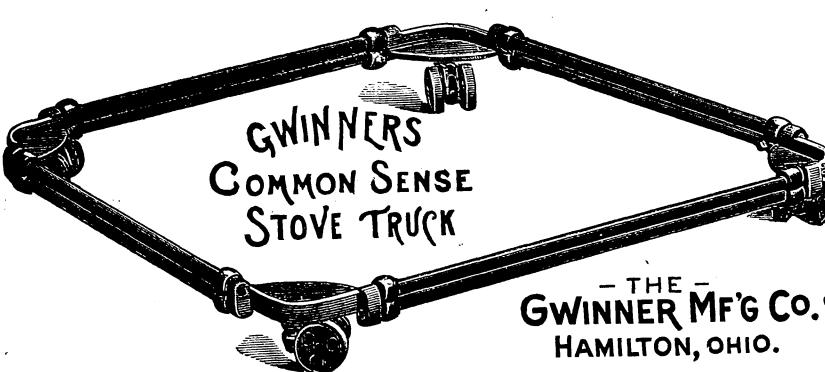
The Drain Cleaner is a hand machine used as a shovel. The dirt pan is made of No. 18 Steel 3 inches deep and 12 inches long, with vertical end in rear. It has a decided advantage over other machines in dipping water and dirt. It is also used for letting down tiling in ditches, which is very convenient and saves extra labor of standing and working in muddy ditches. The iron adjusting rod can be used with great rapidity and ease and can be adjusted to pull or push with as quick a motion as may be desired.

To use it in any particular shape tighten the set screw.

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Manufacturers of

BOLT CUTTERS

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Electric Toy Making, Dynamo Building and Electric-Motor Construction. By T. O'CONOR SLOANE, A.M., E.M., Ph.D. This work treats of the making at home of electrical toys, electrical apparatus, motors, dynamos, and instruments in general and is designed to bring within the reach of young and old the manufacture of genuine and useful electrical appliances. The work is specially designed for amateurs and young folks. Very fully illustrated.... \$1.00
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We have a full line of above, which is the neatest pattern ever presented to the trade, and it is stamped



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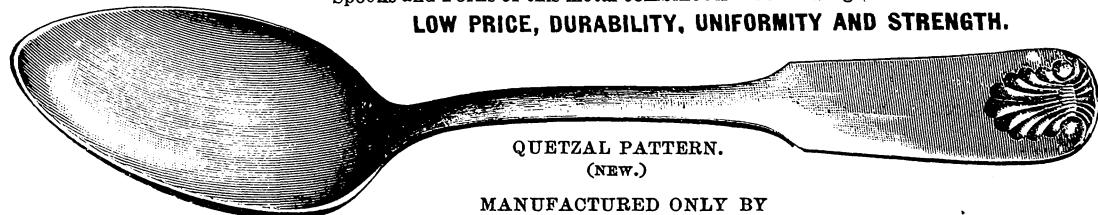
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AZTEC COIN METAL

MADE INTO SPOONS AND FORKS.

Spoons and Forks of this metal combine all the following desirable features:

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THE HOLMES & EDWARDS SILVER CO.,

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AZTEC COIN METAL
has no plating to
wear off. Made
of solid metal.
Easily kept clean.

Solid Columbian Silver Flat Ware, a Substitute for Solid Silver.

WARRANTED FOR 25 YEARS.



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**KNIVES,
SELL AT SIGHT. FORKS &
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Also manufacturers of Silver Plated Flat Ware in Knives, Forks, Spoons, Sugar Shells, &c.

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The above cuts represent a pencil in exact imitation of 10d cut-nail, which can be stamped on the side any name or business desired.

It is especially desirable for nail manufacturers and hardware merchants for advertising purposes.

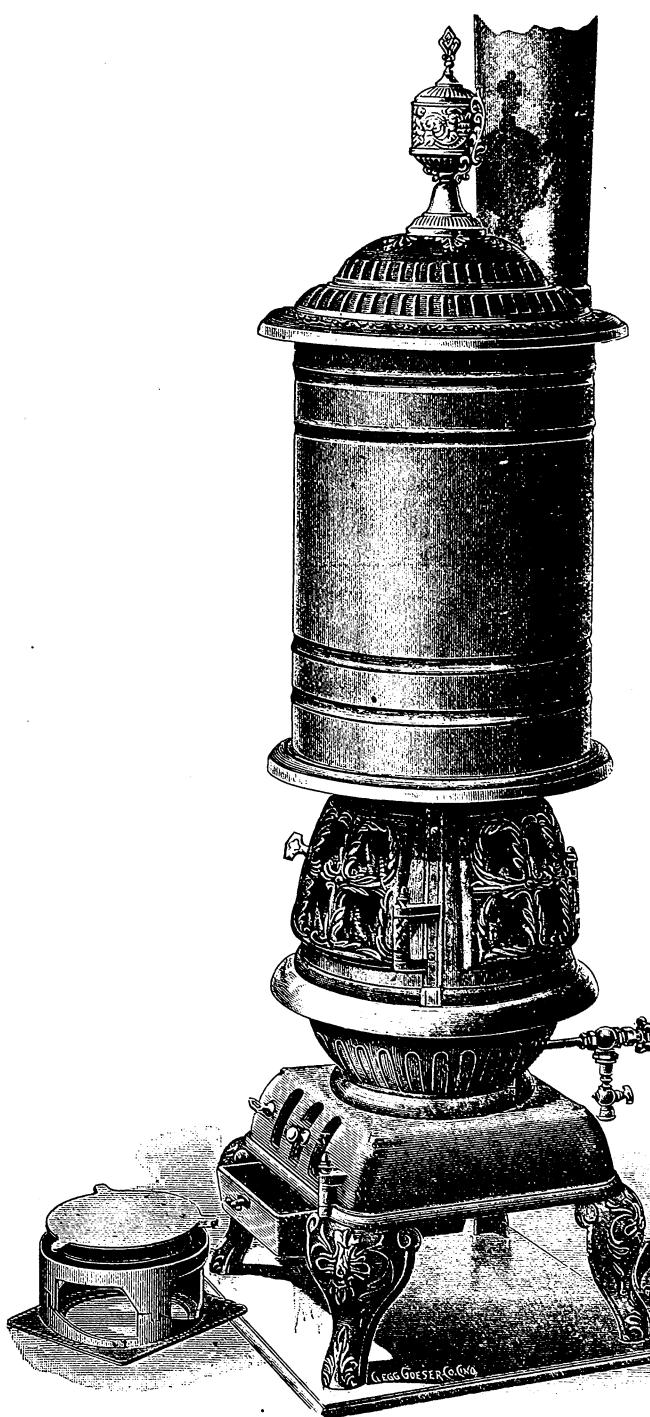
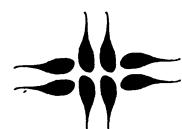
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AN INTENSE HEAT,

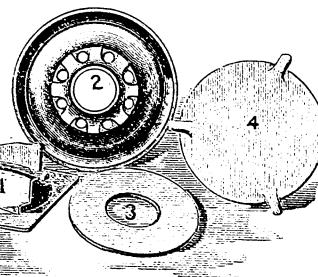
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A STEADY HEAT
AT ALL TIMES.



FOR BURNING Crude Petroleum, Torch or Kerosene Oil. Has a stove pipe which carries off the waste products of combustion, so there is no odor, no smoke and no foul air.

Can be changed from an oil stove to one for burning coal by lifting out the top plate of burner and substituting a coal grate which is furnished with each stove. This can be done in a moment and while the stove is red hot, and without allowing the fire to go out. Experiments extending over several months' time show the stove consumes from one-sixth to one-fourth gallon of Crude Oil per hour, according to the amount of heat required. The oil can be bought for from three to four cents per gallon.

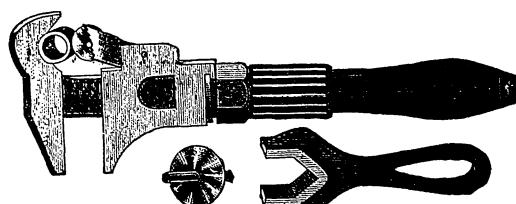


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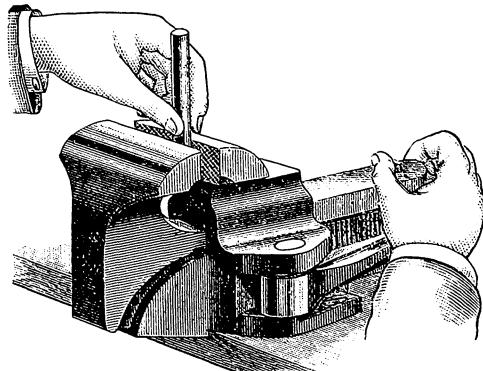
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Manufacturers of Cook and Heating Stoves.

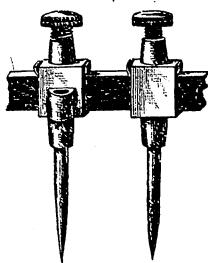
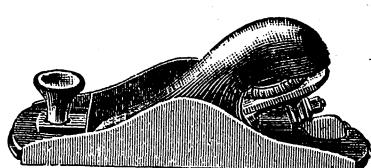
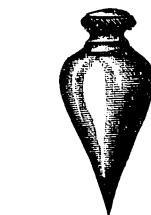
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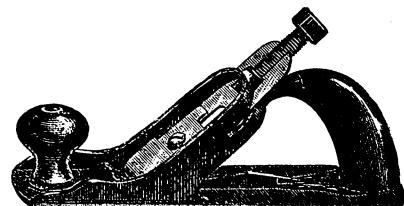
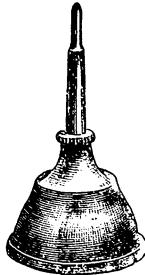
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Short or Long Sleeve Nuts, and
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**Challenge Iron Planes.
Simplicity of Construction.**

Boardman's Pat. Wrenches, Excelsior Expansion Bits, Whitney Drills, Baxter's Wrenches, Wood's Pat. Plumb and Levels, Devoe's Square Attachments, Gem Wrenches, Malleable Oilers and Lamps, Pencil Attachments.

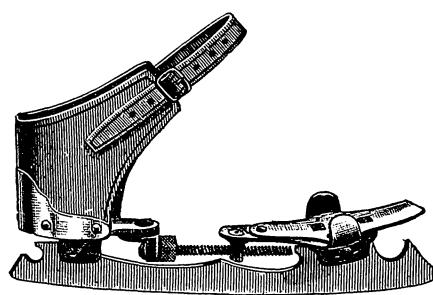
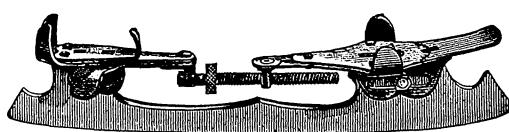
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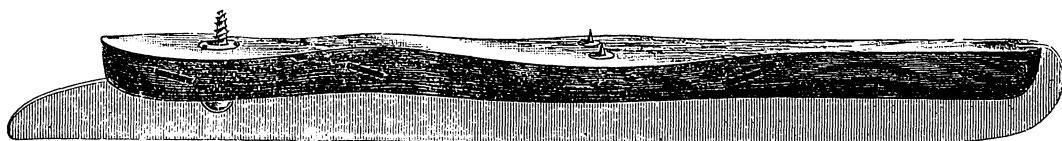
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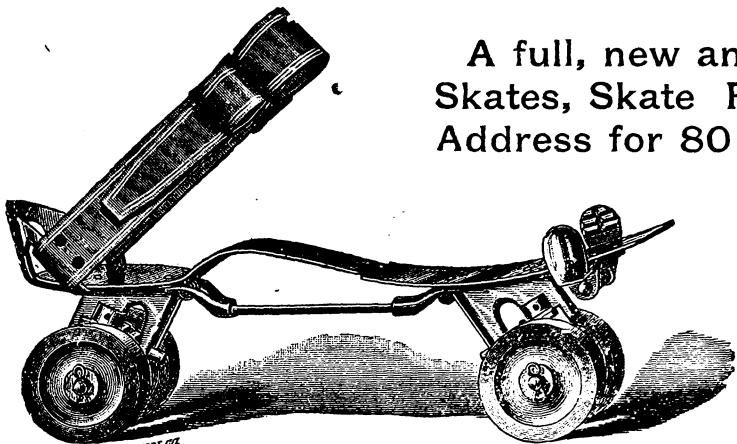
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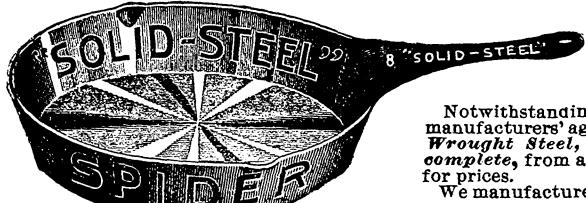
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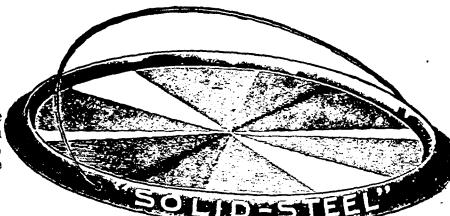
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BRILLIANT FINISH.

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We manufacture our own goods.



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We do Light and Heavy Stamping and Blanking. Also build Dies and Stamping Machinery.

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TRUE.
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PRICE LOW.

SEND FOR DESCRIPTION.

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REVOLVERS.

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AND OTHER TOOL SPECIALTIES.

The Combination Haft contains six Brad-Awls, one Chisel, Screw Driver, Diamond Point Awl, Marking Awl, Tack Puller and Reamer. Send for Circular and Prices.

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WILL CUT ANYTHING.**



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66 Beverly St.,
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23,000 Sold.

It is the Best in the World.
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PHILLIPS SCREENS
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STEEL STAMPS
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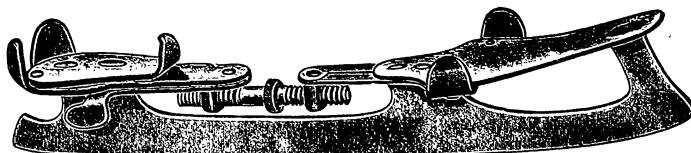
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Headquarters for Winslow Skates.

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1893-94 Catalogue Now Ready.

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The most extensive Skate Factory in the World.

In EVERY LAND where water freezes
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FACTORY AT SPRINGFIELD, MASS.

ONLY AWARD AT
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MEDAL and DIPLOMA.



Why not get the BEST?

FOR SALE BY ALL LEADING JOBBERS OF HARDWARE
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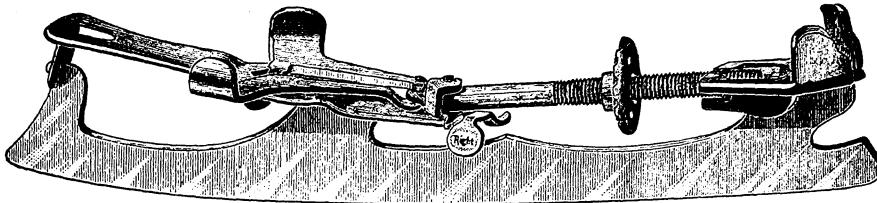
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THE LONG REACH SKATE

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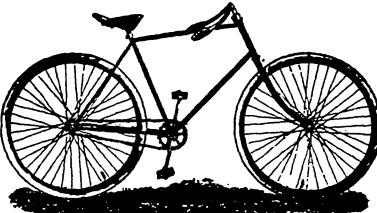
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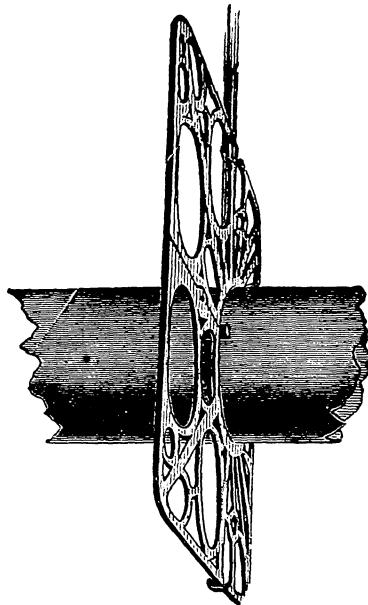
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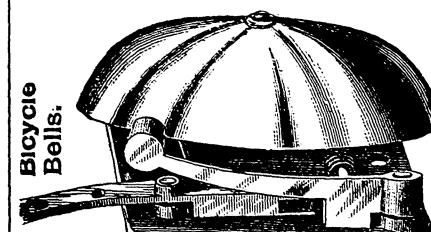
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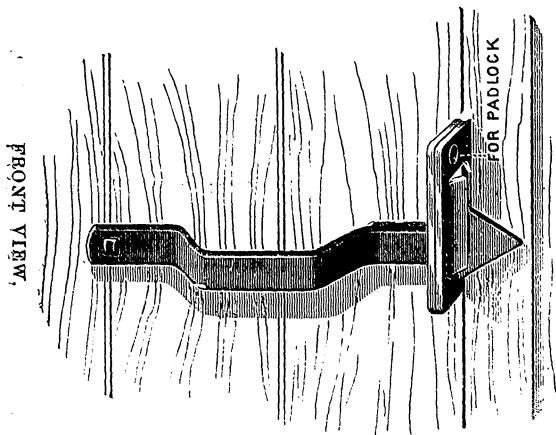
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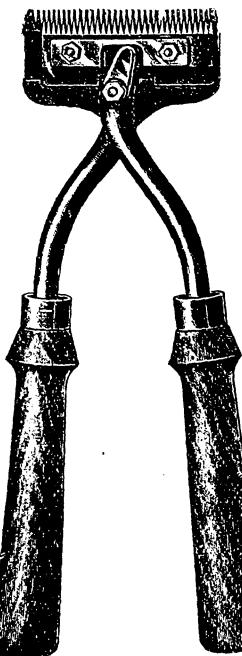
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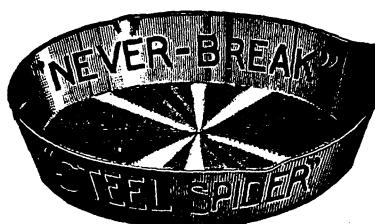
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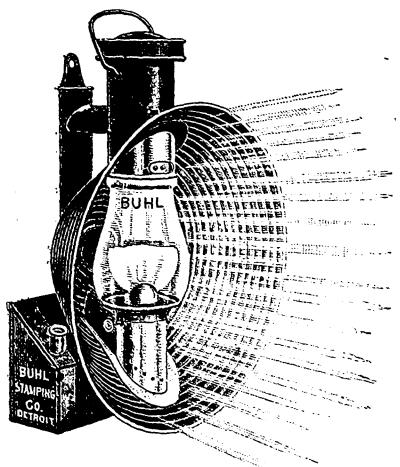


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IS THE Best Street Lamp Manufactured.
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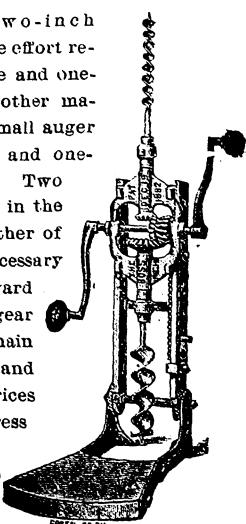
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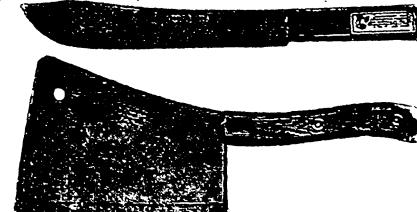
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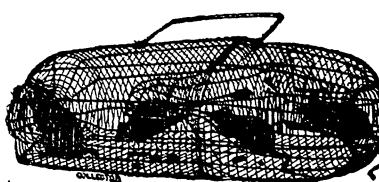


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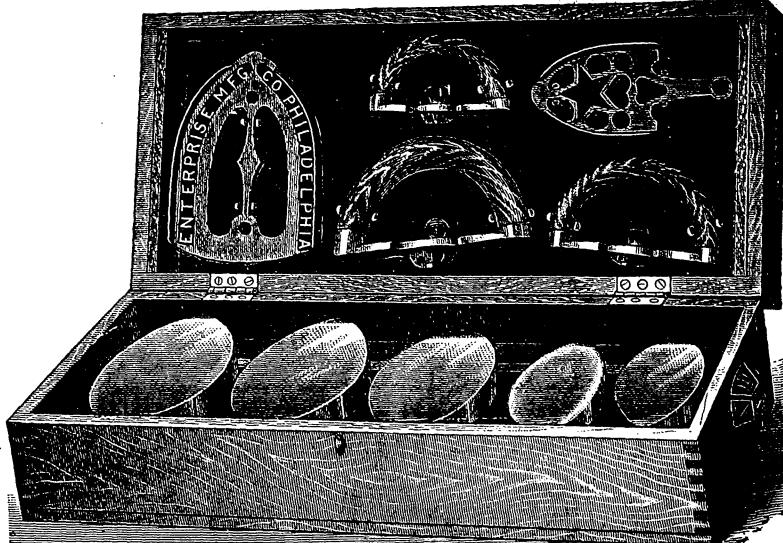
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Trade

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We Guarantee our "Shield High Grade" Belt to be made of best long staple, 30 & 32-oz. cotton duck; To be the most durable, because it is made of best materials, by special machinery; To be the best selling belt, because it has the best reputation, a cleaner record of long service, and because its warrantee is stronger, bolder, broader than any other, and is irrevocable, protecting both dealer and consumer. We further guarantee that should any belt, under fair and reasonable service, fail or give out from any defect in material or manufacture, to replace same free of charge, on return to us.

Witness our hand and seal.

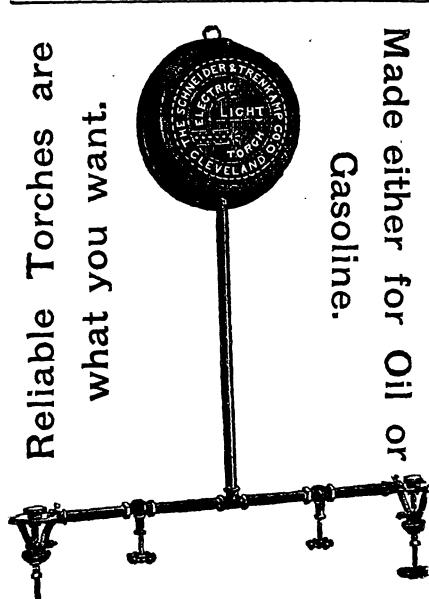


Cleveland Rubber Works

Of the Mechanical Rubber Co.

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OF THE MECHANICAL RUBBER CO., CLEVELAND, OHIO.

Reliable Torches are
what you want.



These Torches are particularly adapted for use in Factories, Foundries, Machine Shops, Rolling Mills, Blacksmith Shops, Warehouses, &c. They make a strong white light, are free from smoke and are not affected by wind or rain. They are convenient and portable. These Torches can be run at an expense of about one-half cent to one cent per hour, burning a bright, steady light which is ten times greater than the light of an ordinary gas burner.

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Made either for Oil or
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LIGHT YOUR DARK SHOPS CHEAPLY.

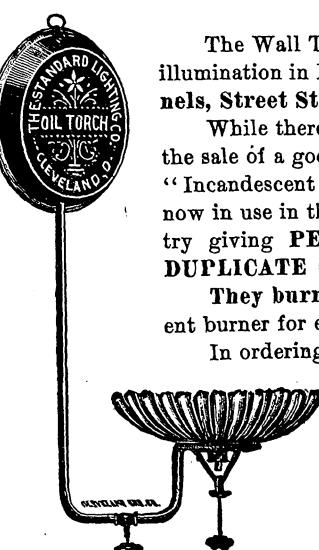
Give your men plenty of Light and they will do double work.

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While there are many cheap, inferior torches made which injure the sale of a good article, and condemn the Torch in general, our "Incandescent" Wall Torches are recognized as the best, and are now in use in the largest manufacturing establishments in the country giving **PERFECT SATISFACTION**, as is evidenced by the **DUPLICATE ORDERS** we receive from year to year.

They burn 150° Coal Oil, or 74° Naphtha, requiring a different burner for each.

In ordering be careful to state which is desired.



Price, for Single Torch, complete, \$2 each.

SPECIAL PRICE QUOTED FOR QUANTITIES.

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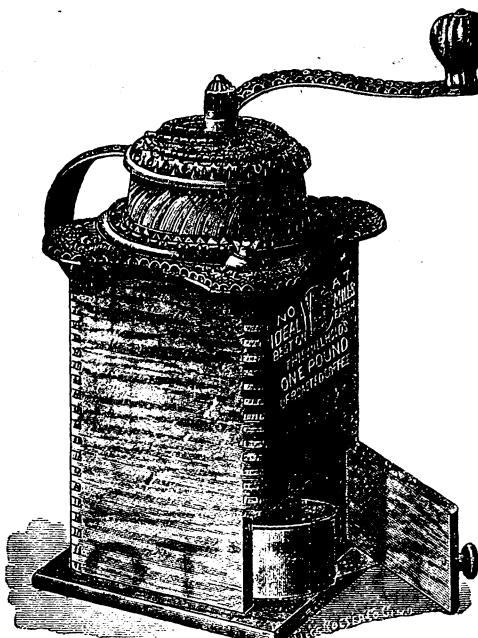
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Coffee Mills are fast becoming the Popular Sellers.

WHY ?

Because they Grind faster, are newer and have a better reputation. We can fit you in size and price.



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COFFEE MILLS, MONEY DRAWERS, ANIMAL TRAPS, &c.,
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TWO FEATURES,
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THAT THE
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The Sun Manufacturing Co.

Successors to the Jno. M. Waddel Mfg. Co.,

ARE SOLE OWNERS AND MANUFACTURERS OF

**Waddel's Improved Coffee Mills,
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Beware of Infringements.—We will protect our Patents.

“THE ‘SUN’ ONLY, SHINES FOR ALL.”

A New Name, A New Reputation,

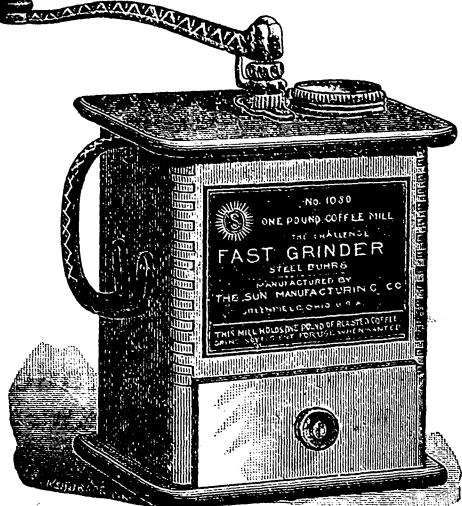
A New Line of Coffee Mills

That under the SUN Brand shine as leaders.

RAPID GRINDERS that will STAND THE WEAR.

STEEL ALLOY BUHRS,

A metal of recent discovery for this purpose used solely and only by the SUN. Warranted to outwear, outgrind and outsell any Coffee Mill ever put on the market.



We Challenge a Competing Test for Rapid Grinding and Wearing Surface.

Our New Line bears the Sun Trade Mark and is labeled Steel Alloy Buhrs.

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**Stone
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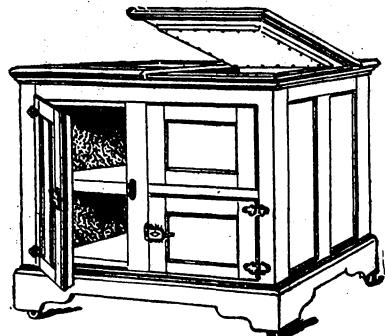
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Quality Same, But Prices Lower.

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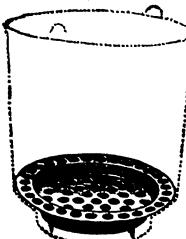
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Made from STEEL.

Prevents meats and vegetables from
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Cannot be Broken.

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Broiler, Toaster, etc.

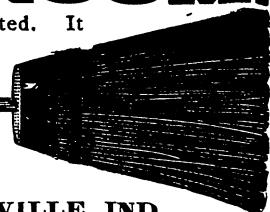
PATENT APPLIED FOR.

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NO. 4 ALL RATTAN BROOM.

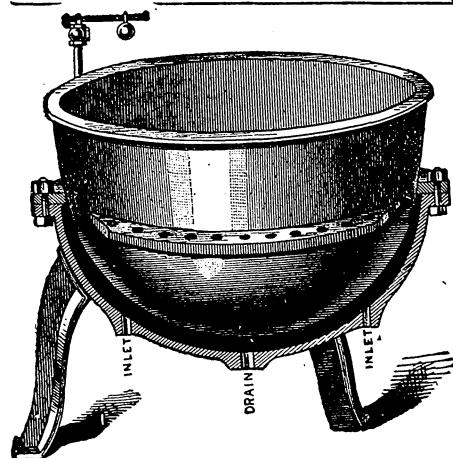
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Jacketed Kettles.

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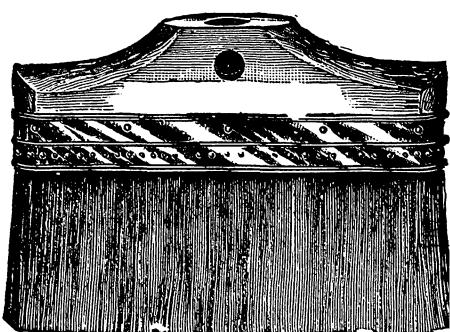
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Hollow Ware.
Hollow Ware.

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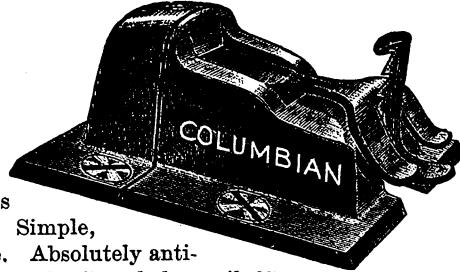


Hardware Trade,
Whitewash, Horse, Paint, Window,
Shoe,

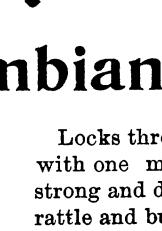
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with one motion. Simple,
strong and durable. Absolutely anti-
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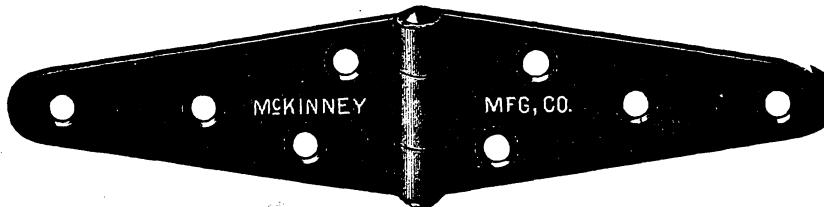
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Sash
Lock.**

WE CLAIM

That one pair of our Celebrated Steel Hinges will outwear two pair of the Flimsy Invention now being forced upon the attention of the trade.

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Steel



Hinges.

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"NONE BETTER."

BARN, MILL AND FIRE DOOR HANGERS.

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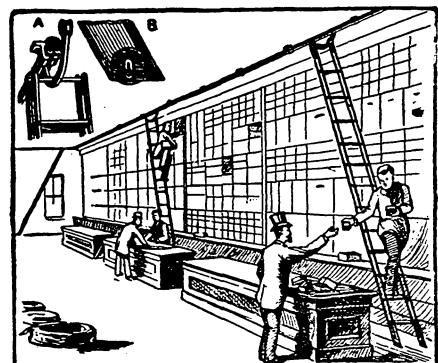
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Parlor, Barn and Fire Door
Hangers.

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Fire Door Hangers. Best in the World. Equipped
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We make four styles of ROLLING LADDERS to
reach shelving of any height.

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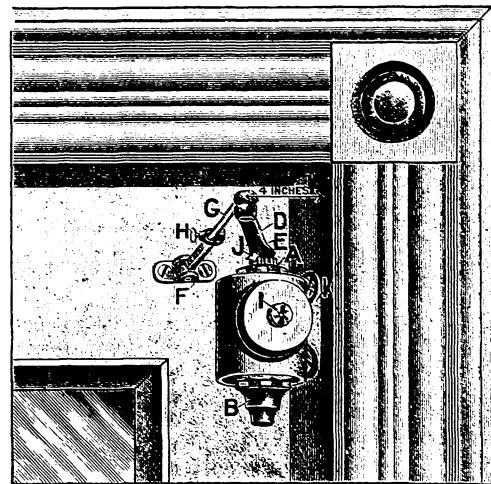
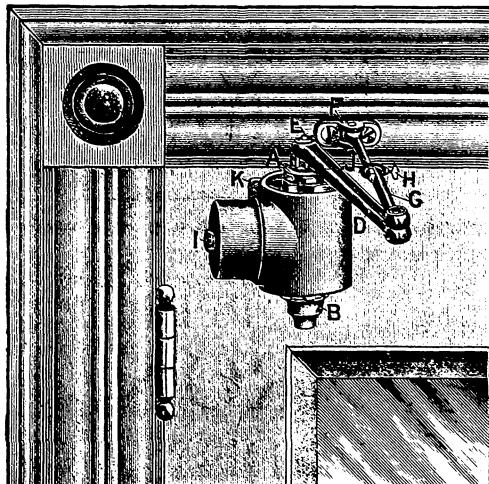
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for all
Requirements.

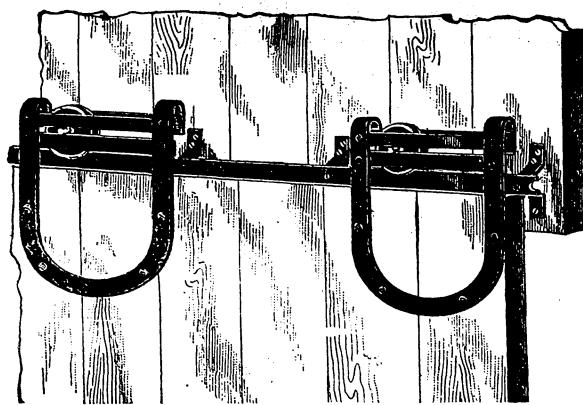


Looks Well,
Acts Well,
Wears Well

LIQUID DOOR CHECKS AND SPRINGS,

Fine Builders' Hardware. Wood AND Machine Screws.

Catalogues and Prices Furnished on Application.



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Manufactured by **LANE BROS.**, Poughkeepsie, N. Y.

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He had in his possession 55 skeleton keys which the police claim would open any door.
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You are selling that kind of a lock every day and

your customers think you are selling the best the market affords.

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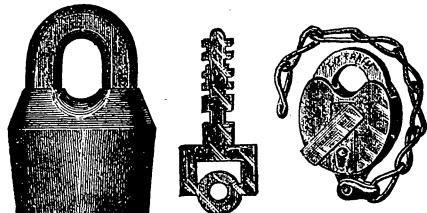
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Cheapest and Best
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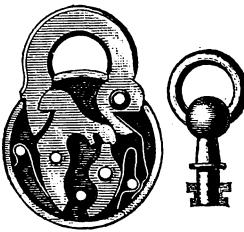
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Sizes, $\frac{3}{4}$ inch to $2\frac{1}{2}$ inches, of cast bronze. Defies competition for quality and price. No steel or iron used, cannot rust, and cannot be picked. Also, $\frac{1}{2}$ and $\frac{3}{8}$ inch Padlocks, opened with a common pin, in brass and nickel, for cats and small dogs. The best Railroad Switch and Car Lock in the world.

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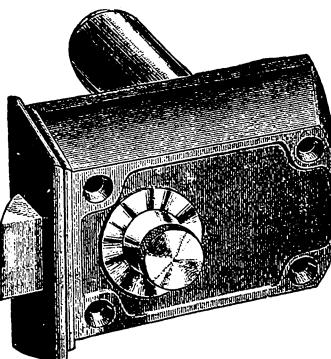
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NON-PICKABLE
ALL BRONZE NIGHT LATCH.

Made also of JAPANNED IRON with
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OUR NEW FINISH.

ANTIQUE COPPER PLATED
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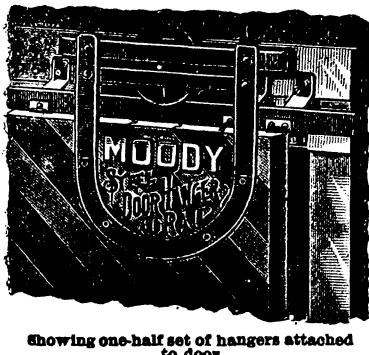
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The Only Bracing Bracket Made.

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RAIL, per foot.....	6½ cents

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WHEN THE STEEL AND IRON

TACKLE BLOCKS

—MADE BY—

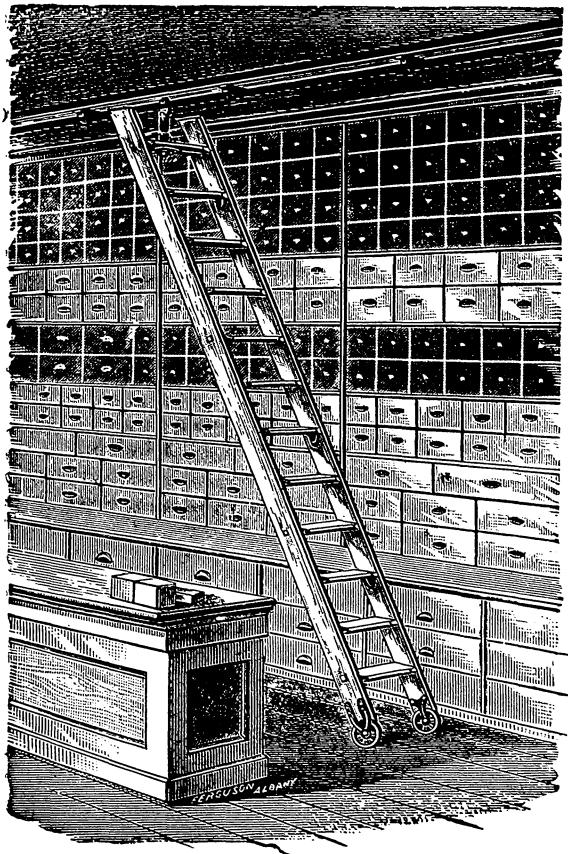
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No waste material. Every ounce of weight in the line of strength. No clumsy outside straps or bolts. As light as wooden blocks and vastly more durable. They wear, but never break. Sheaves interchangeable.

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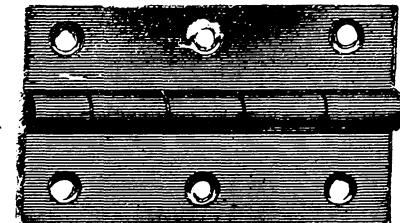
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The latest and best. Perfectly noiseless. Neat in appearance.

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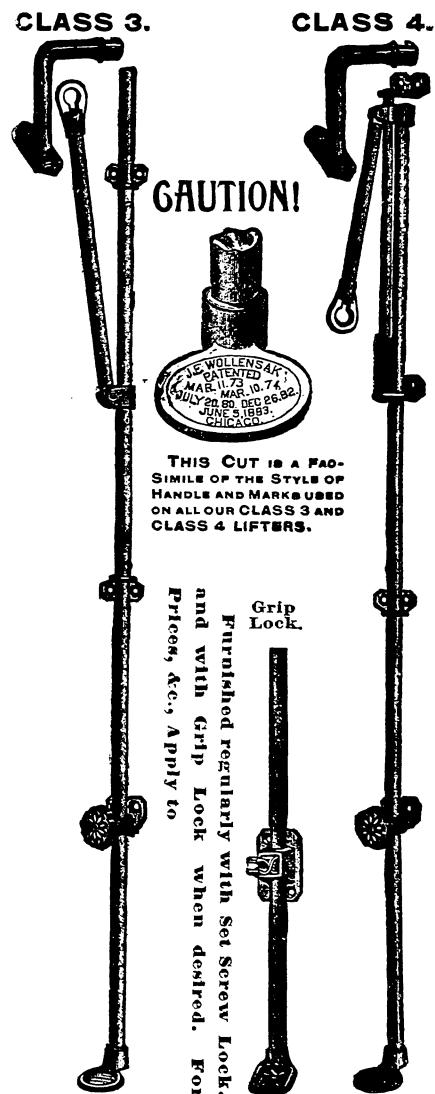
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OLD RELIABLE

J. F. WOLLENSAK'S PATENT.

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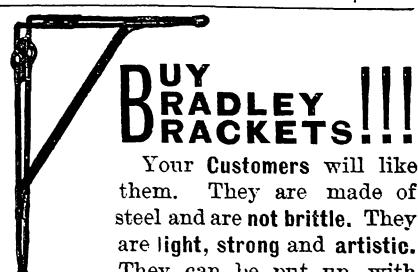
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Furnished regularly with Set Screw Lock,
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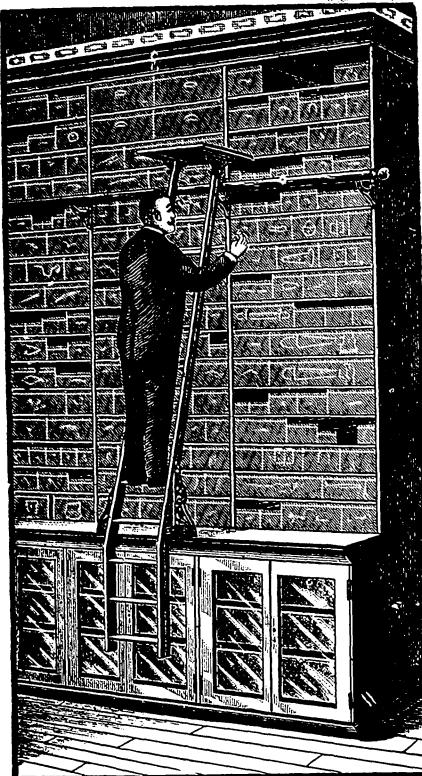
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Your Customers will like them. They are made of steel and are not brittle. They are light, strong and artistic. They can be put up with nail and hammer. Write for prices.

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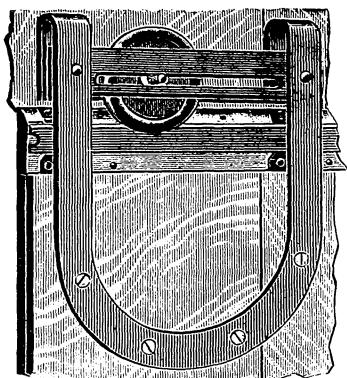
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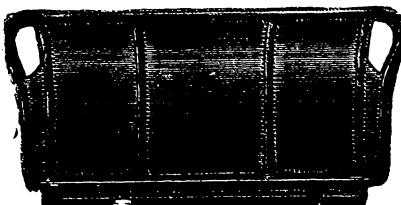
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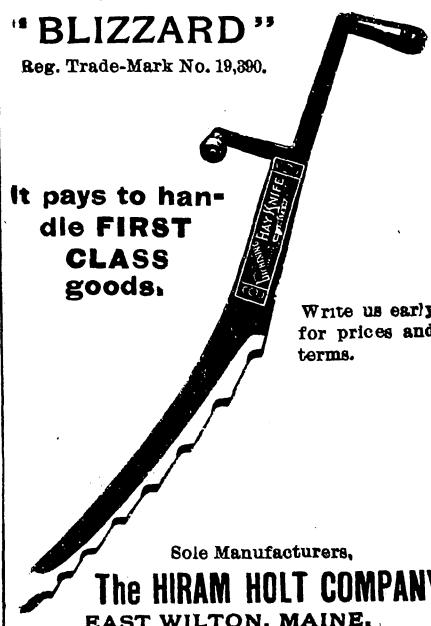
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FOR DOORS AND WINDOWS, ARE WELL
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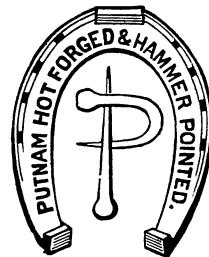
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Highest Award

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TO
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At the *World's Columbian Exposition* at Chicago. A medal and diploma worded :
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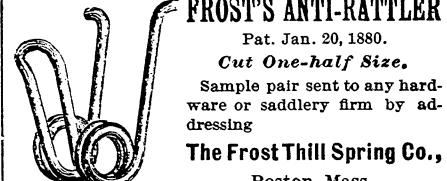
By the "use of small nails," large holes are avoided and money saved to the smith.

Thus it will be seen that the officials of the *World's Columbian Exposition* recognize what qualities go to make up a good horse nail and that only the "Putnam" contains them all.

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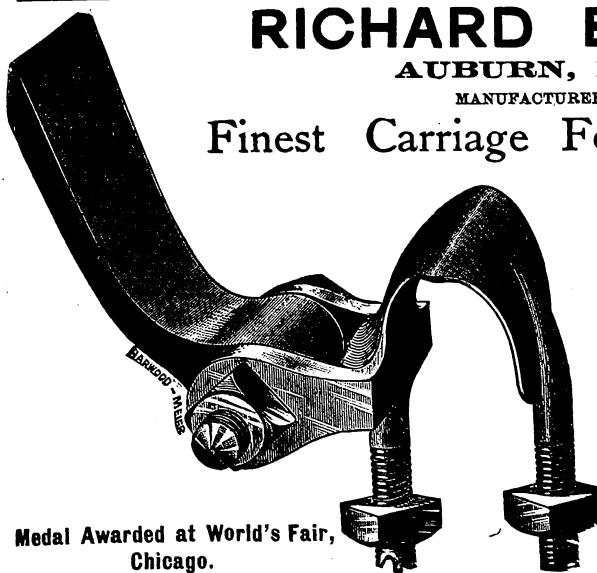
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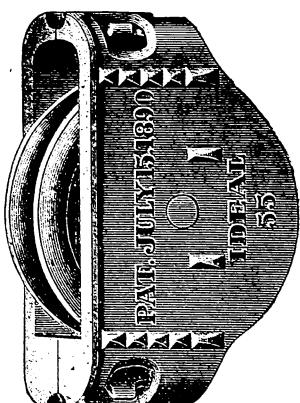
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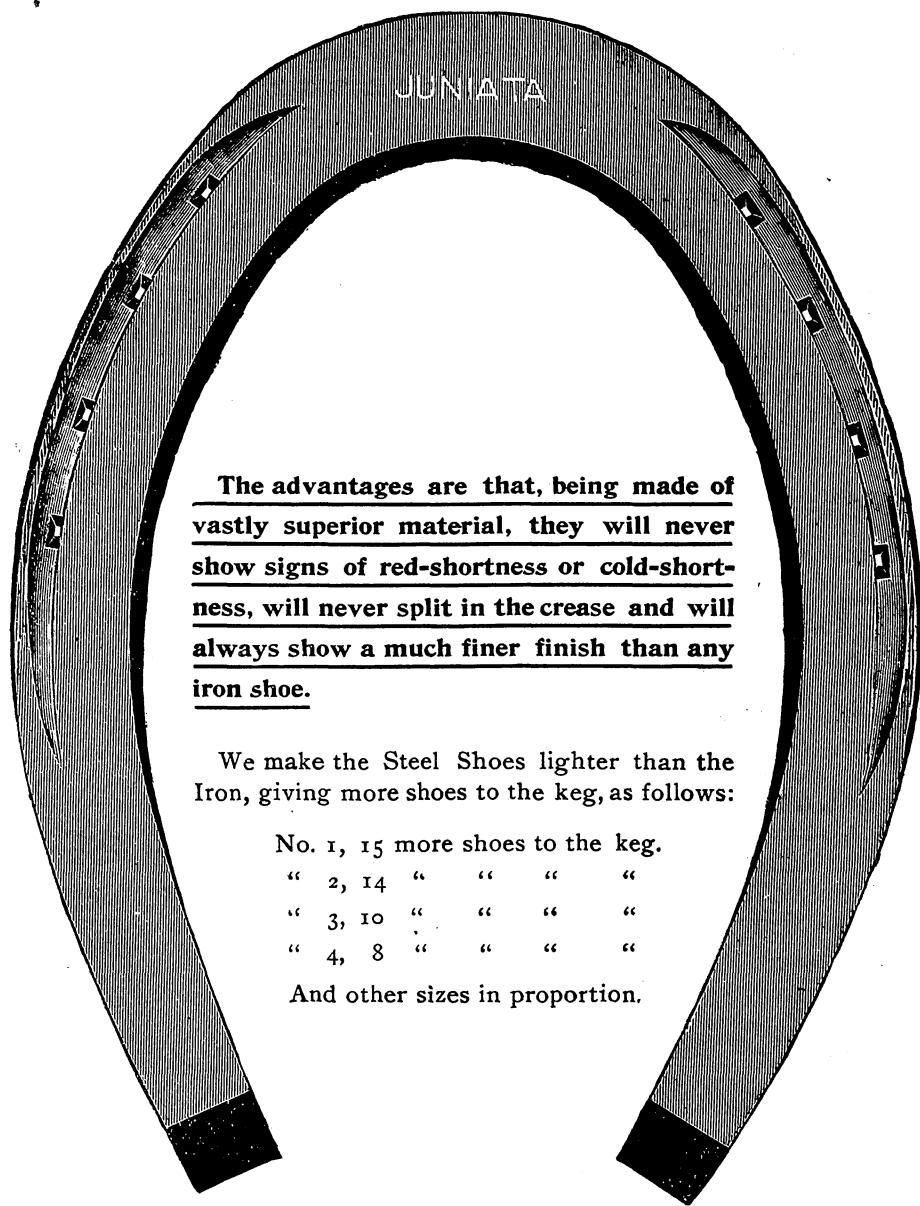
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After numerous and costly experiments have succeeded in manufacturing a special quality of soft homogeneous steel, specially adapted to the manufacture of Horse and Mule Shoes, and are now making from this steel Extra Swaged, and Government Pattern Horse and Mule Shoes. They give the best of satisfaction everywhere and we furnish them to the trade at the same prices as the regular iron shoe sold by ourselves and our competitors. We are at present making our Roadster Pattern Horse Shoes out of Iron, but we will make them of Steel also within a short time.



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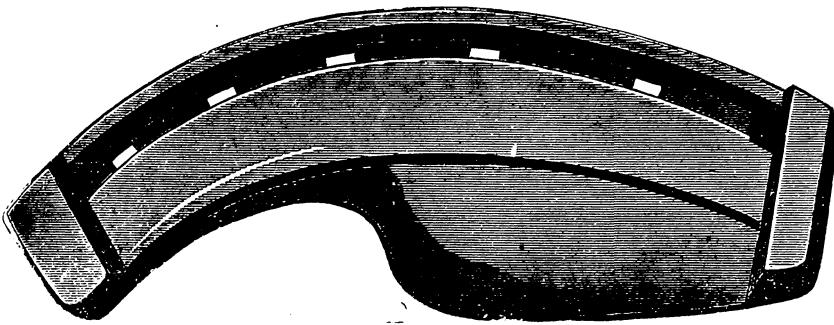
Write to us for information and prices, or apply to jobbers and dealers, who sell them everywhere.

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CARRIAGE HARDWARE AND
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SHOES.



Made under Deeble's Patent, Aug. 9, 1887.

Our 1891 pattern is a modification of the style we have made for the past four years, giving additional strength to the web.
IT IS JUST RIGHT.



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Superior Quality, Shape and Finish.

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THE NEW DIAMOND STATE HORSE AND MULE SHOES.

JUST TRY THEM and YOU will say they excel all others.

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WILMINGTON, DELAWARE.

Other "high grade" specialties in Rivets, Spikes, Splice Bars, Track and Machine Bolts, Bag Nuts, Stay Bolt Iron, Horse Shoe Iron, Bar Iron, &c.

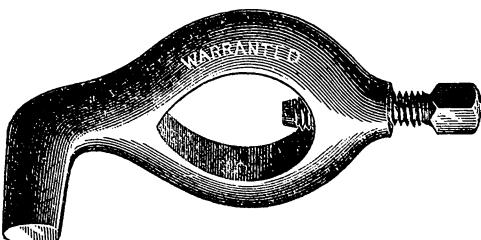
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With Steel Screws. U. S. Standard and the points hardened.



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5	78	70	17	4	2 10
6	1	70	18	412	2 75
7	16	80	19	5	3 25
8	14	80	Full set of 19		\$23 60
9	136	95	20(extra)512		4 00
10	112	95	21	6	5 00
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12	2	1 20	23	8	7 00
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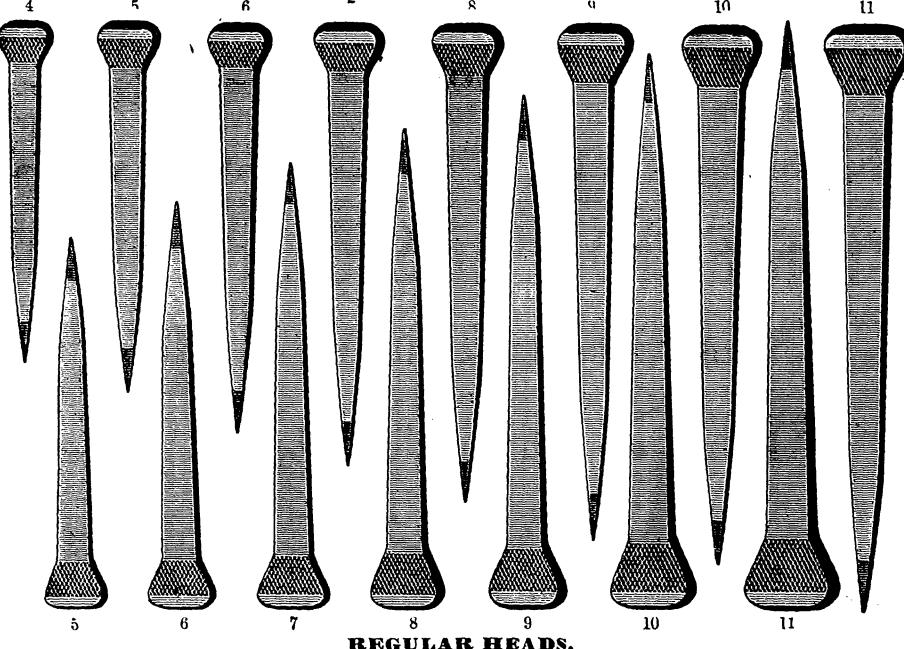
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AT

WORLD'S COLUMBIAN EXHIBITION.

CAPEWELL HORSE NAILS.

"Tensile strength one-half greater than that of any other nail made."

CITY HEADS.



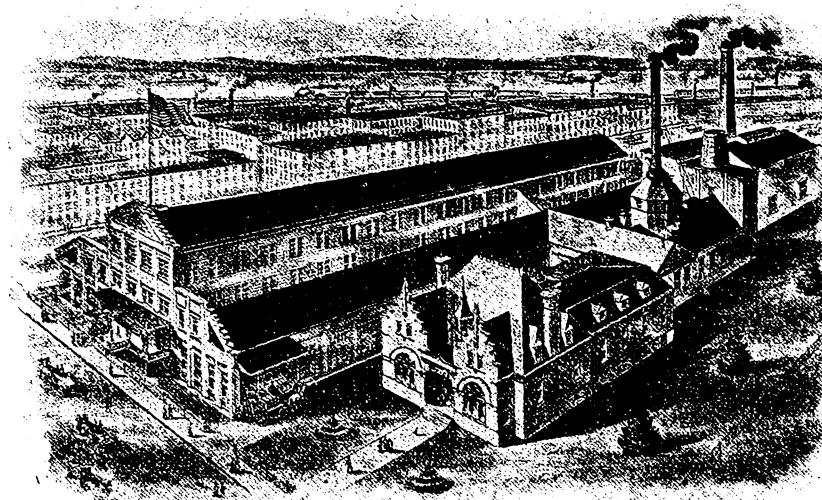
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Made in
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CARRIAGE MAKERS' HARDWARE,

MANUFACTURE THE LARGEST VARIETY OF

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Of Best Material and Workmanship.

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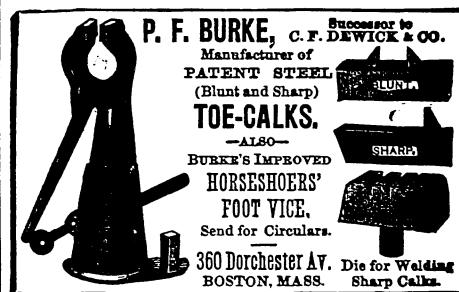
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IRON CO.

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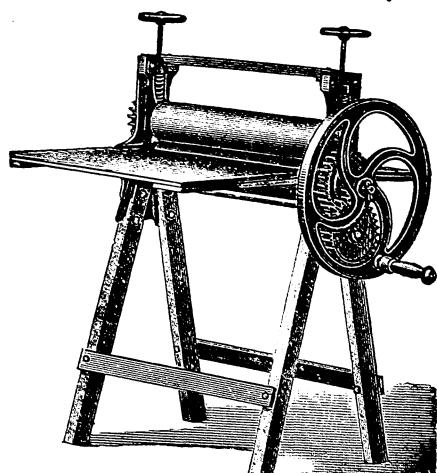
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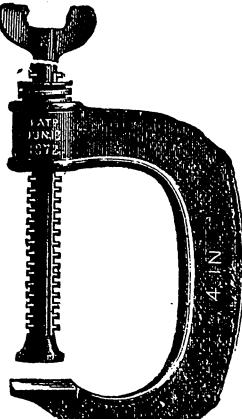
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MALLEABLE IRON

Hammer's Adjustable Clamps.



Hammer's

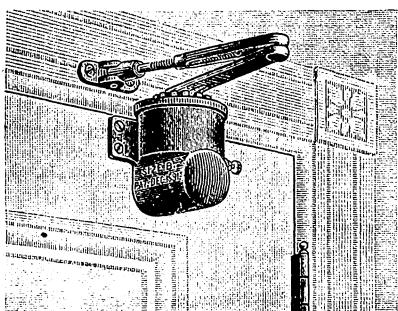
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NEW pattern Heavy Screw Clamps.

Strongest in the market.

For sale by all the principal Hardware dealers.
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Estimates cheerfully given. Send for Catalogue



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Perfect in action, durable, neat in appearance, low in price and fully warranted. Responsible Agents wanted in the principal cities.

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This Wrench can be Furnished with Long Nut or Sleeve.

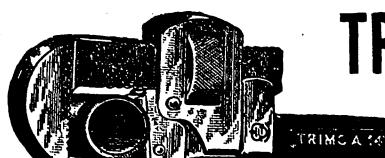
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Case-Hardened Throughout.

Parts Interchangeable.

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All parts interchangeable.

Grips firmly without loss of motion. Releases readily. Never locks. Causes no trouble in close quarters. Does not crush the pipe.

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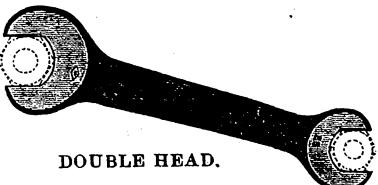
CHAIN

PIPE

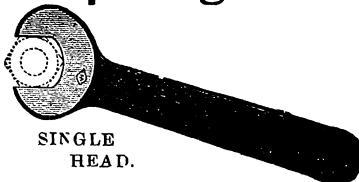
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Superior in strength and ease of operation.
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TRIMO BASIN WRENCH.

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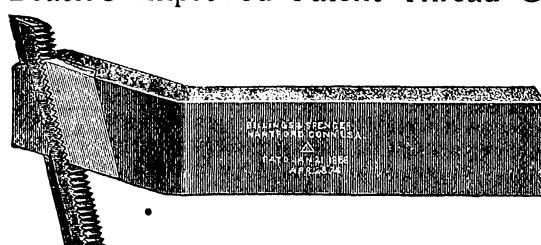
Drop-Forged Steel Engineers' Wrenches.

The largest uniform line in the market, taking nuts for $\frac{1}{8}$ in. to $2\frac{1}{4}$ in. bolts inclusive
SPECIAL WRENCHES MADE TO ORDER.

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J. H. WILLIAMS & CO. 9-15 Richards St., Brooklyn, N. Y.
Standard and Special Drop-Forgings.THE BILLINGS & SPENCER CO., HARTFORD,
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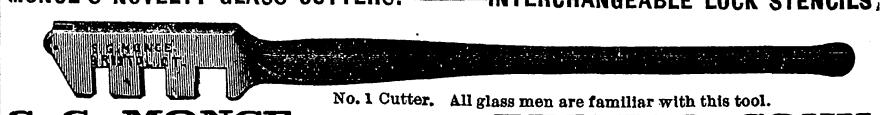
Beach's Improved Patent Thread Cutting and Diamond Point Lathe Tool.

Furnished in Two Sizes,
Either Size with Bent or
Straight Holder.We furnish Cutters for U. S. S.
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MONCE'S NOVELTY GLASS CUTTERS.—INTERCHANGEABLE LOCK STENCILS.



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No. 1 Cutter. All glass men are familiar with this tool.

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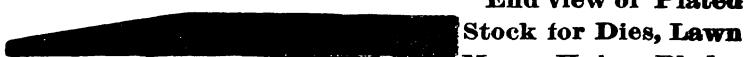
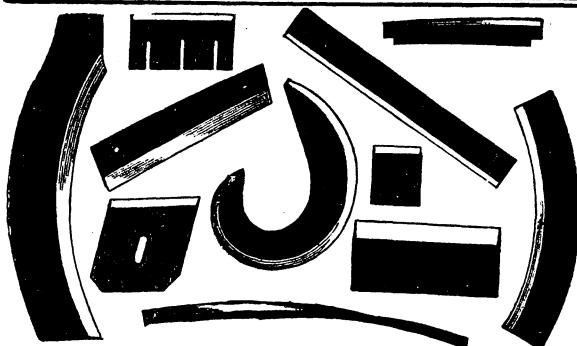
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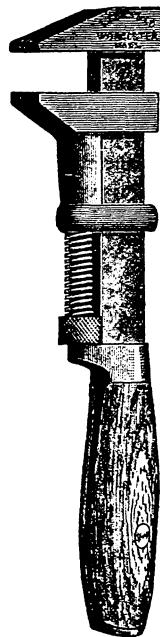
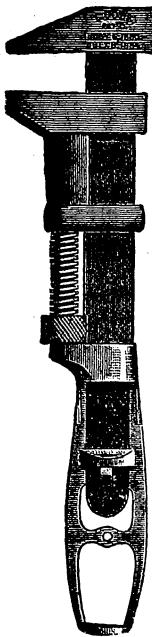
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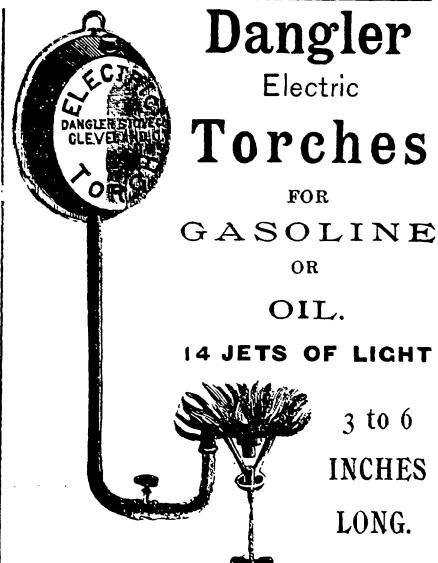
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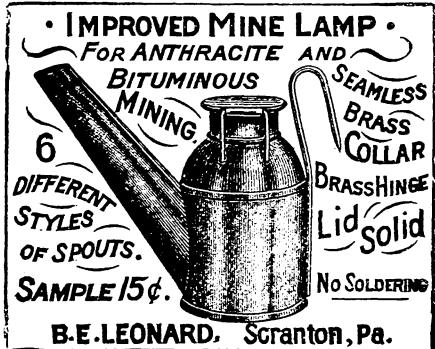
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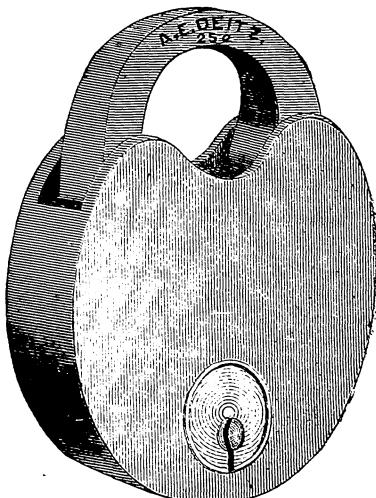
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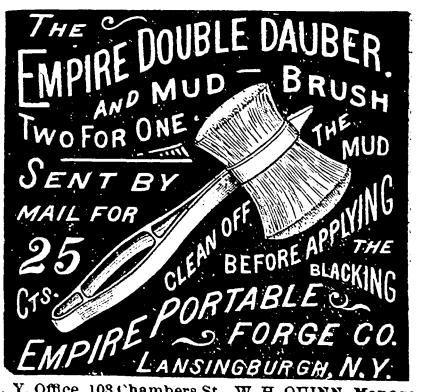


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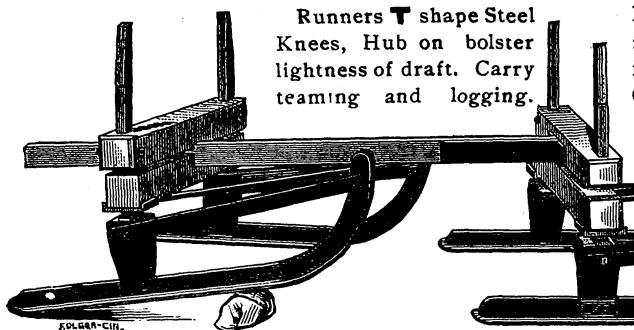
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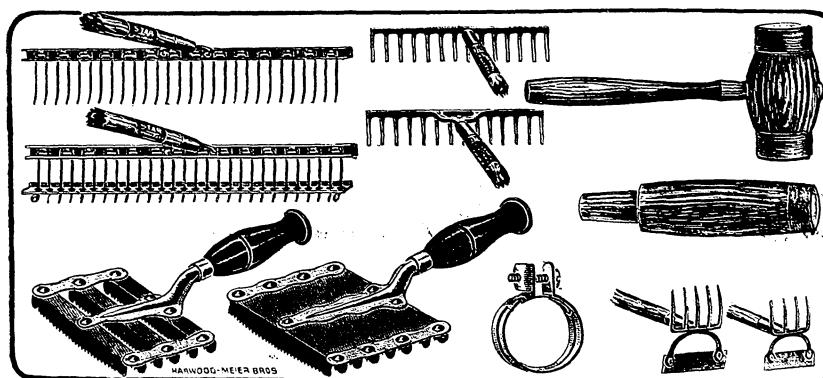
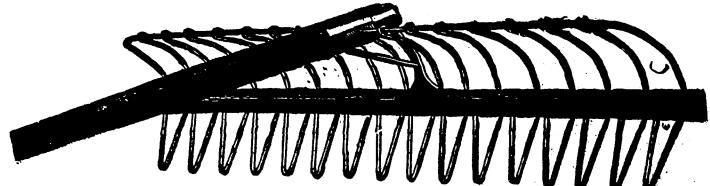
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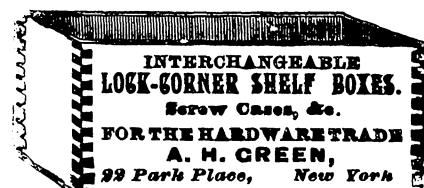
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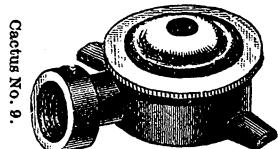
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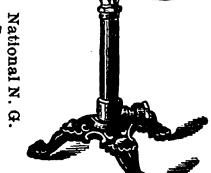
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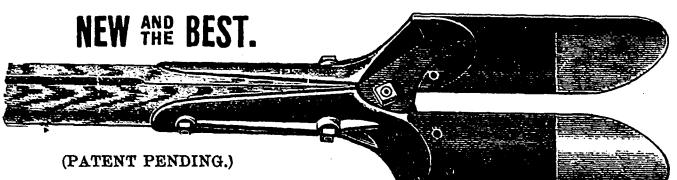
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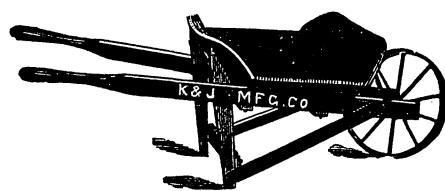
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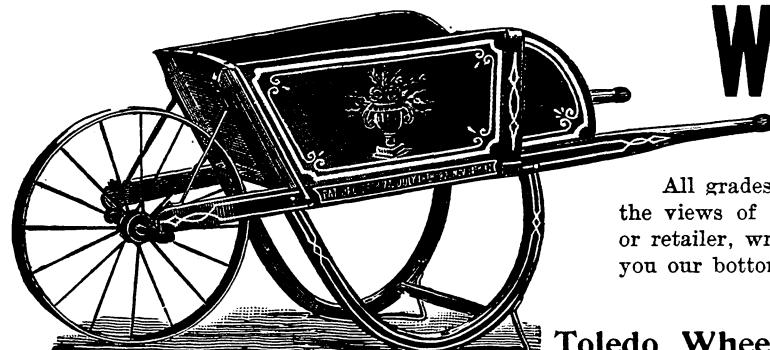
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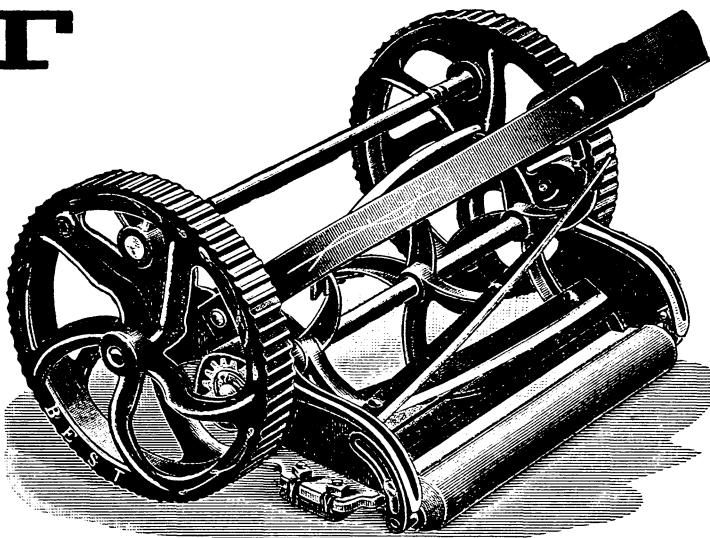
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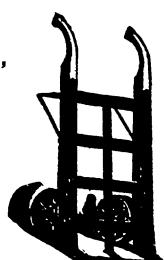
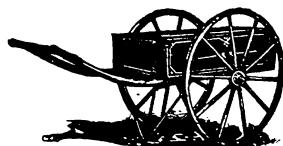
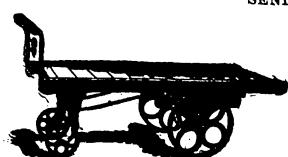
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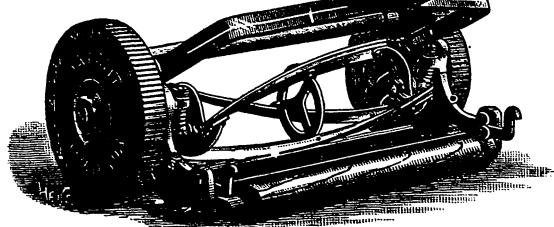
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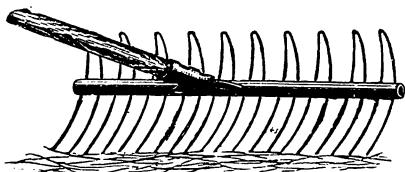
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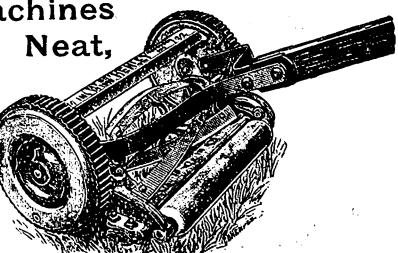
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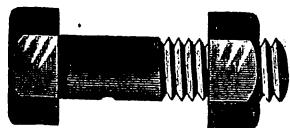
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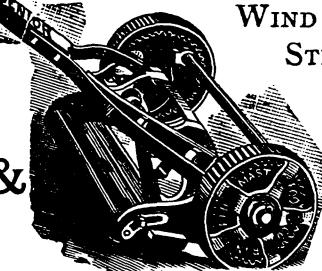
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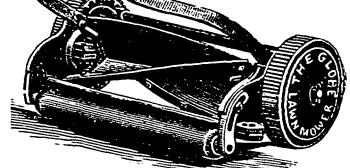
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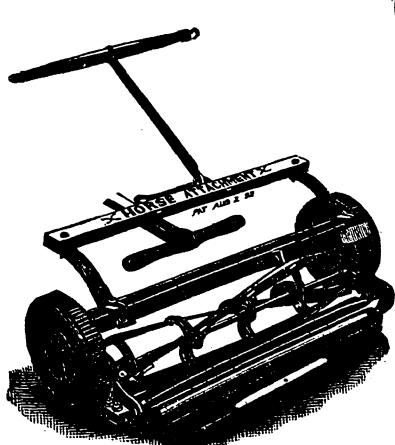
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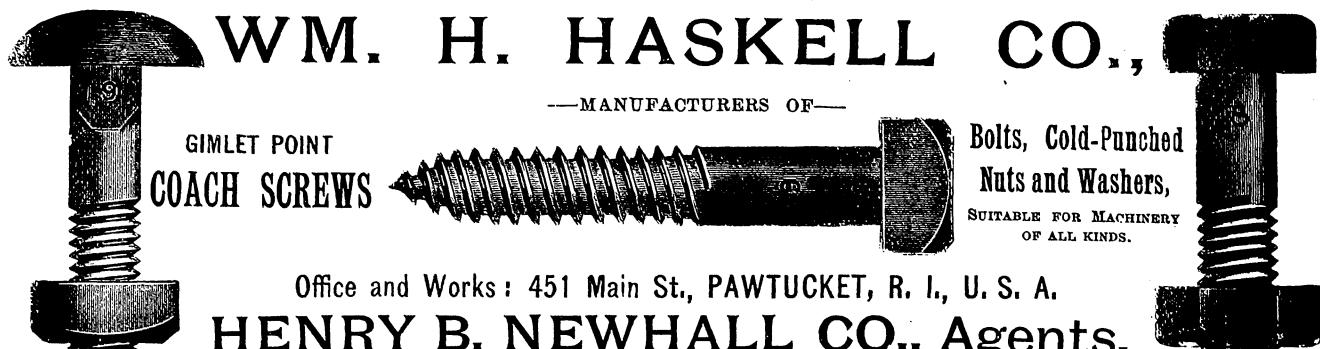


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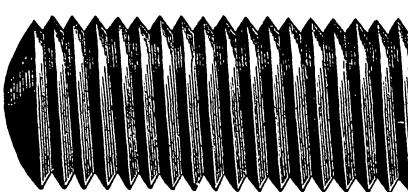
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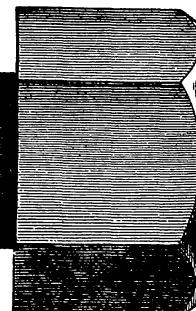
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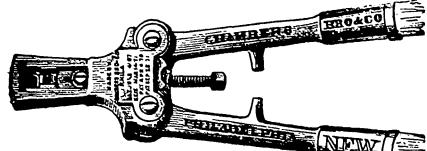


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Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lan-
caster, Pa.
Huyett & Smith Mfg. Co., Detroit, Mich.
Sturtevant, B. F. & Co., Boston, Mass.

Boiler Plates.

Carbon Steel Co., Pittsburgh, Pa.
McIlvain, Wm. & Sons, Reading, Pa.
Lukens Iron & Steel Co., Coatesville, O.
Pottstown Iron Co., Pottstown, Pa.

Boilers, Copper.

Randolph & Clowes, Waterbury, Conn.

Boilers, Steam.

Sabcock & Wucox Co., 30 Cortlandt,
Edge Moor Iron Co., Wilmington.
Fulton Steam Boiler Works and Fdrv.
Richmond, Ind.
Harrison Safety Boiler Wks., Phila., Pa.
Phoenix Iron Works Co., Middletown, Pa.
Pollock, W. B. & Co., Youngstown, O.
Southwick Fdy. & Mfg. Co., Phila., Pa.
Sterling Co., Chicago, Ill.
Wetherill, Hobt. & Co., Chester, Pa.

Bolt Cutters.

Chambers Bros. Co., Philadelphia.
Howard Iron Works, Buffalo, N. Y.
Porter, H. K., Boston, Mass.
Reece, Edw. F., Greenfield, Mass.
Wells Bros. Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield
Mass.

Bowls.

Marine Review, Cleveland, Ohio.
Williams, David, 96-102 Beade, N. Y.
Wolcott & West, Syracuse, N. Y.

Boring Machines.

Buckeye Mfg. Co., Union City, Ind.

Boxes, Hdw. Shelf, &c.

Green, A. H., 22 Park Place, N. Y.

Box Straps and Corners.

Buffalo Specialty Mfg. Co., Buffalo,
N. Y.

Brackets.

Atlas Mfg. Co., New Haven, Conn.

Braes, Manufacturers of.

Ansonia Brass & Copper Co., N. Y.
Davol, John & Sons, 100 John, N. Y.
Plume & Atwood Mfg. Co., N. Y.
Randolph & Clowes, Waterbury, Conn.
Scovill Mfg. Co., Waterbury, Conn.
Waterbury Brass Co., 296 B'way, N. Y.

Brass Butt Hinges.

Tiebout, W. & J., 16 & 18 Chambers.

Brass Founders.

Best, Fox & Co., Pittsburgh, Pa.
Bridgeport Deoxidized Bronze & Metal
Co., Bridgeport, Conn.
Cramp, Wm. & Sons, S. & E. B. Co.,
Philadelphia, Pa.
Emory, F. P. Mfg. Co., Springfield,
Mass.
Eyton-Evans Mfg. Co., Philadelphia,
Pa.

Fraim, E. T., Lancaster, Pa.

Haight & Clark, Albany, N. Y.

Keys, W. W. & R. M. Co., Bridgeport,
Conn.

North Bros. Mfg. Co., Phila., Pa.

Reeves, Paul S., Philadelphia.

Brass Goods.

Brass Goods Mfg. Co., 88 Chambers,

Bread and Cake Knives.

Clauss Shear Co., Fremont, O.

Bridge Builders.

Berlin Iron Bridge Co., East Berlin, Ct.
Boston Bridge Works, Boston, Mass.
Wrought Iron Bridge Co., Canton, O.

Brouze (Tobin).

Ansonia Brass & Copper Co., 19-26 Cliff
Street, N. Y.

Broome and Brushes.

Cincinnati Mfr. Co., Cincinnati, O.
Lay, Jos. & Co., Ridgeville, Ind.

Builders' Hardware.

Corbin, F. E., New Britain, Conn.
Deitz, A. E., 97 Chambers St., N. Y.
Reading Hdw. Co., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.

Butchers' Steels.

Chatillon, John & Sons, 85-89 Cliff St.,
N. Y.
Hoffman, C. & A., Philadelphia, Pa.

**Butcher and Shoe Knives, Man-
ufacturers of.**

Chotillion, John & Sons, 85-89 Cliff St.,
N. Y.
Goodell Co., Antrim, N. H.
Wilson, John, Sheffield, England.

Butts and Hinges.

McKinney Mfg. Co., Alleghany, Pa.
Sabin Machine Co., Montpelier, Vt.

Stanley Works, New Britain, Conn.
Tiebout, W. & J., 16 Chambers, N. Y.

Calipers and Dividers.

J. Stevens Arms and Tool Co., Chicopee
Falls, Mass.
Starrett, L. S., Athol, Mass.

Car Axles.

Roberts, A. & P. & Co., Phila.

Carryboards.

Hillbrand & Wolf, Philadelphia, Pa.

Car Wheels.

Whitney, A. & Sons, Phila.

Cartridge Reloading Tools.

Ideal Mfg. Co., New Haven, Conn.

Casters, Wheel, &c.

Clark, G. P., Windsor Locks, Conn.

Castings, Iron and Steel.

Ames Sword Co., Chicopee, Mass.
Arcade Malleable Iron Co., Worcester
Mass.

Booth, The Lloyd, Co., Youngstown, O.
Burgess & Loxley, Buffalo, N. Y.

The Burr & Houston Co., Brooklyn, N. Y.

Cambria Steel-Cambria Iron Co.,
Johnstown, Pa.

Cheney, S. & Son, Manlius, N. Y.

Chester Steel Casting Co., Phila.

Chrome Steel Works, Brooklyn, N. Y.

Dayton Malleable Iron Co., Dayton, O.

Ette & Henger Mfg. Co., St. Louis, Mo.

Eureka Cast Steel Co., Chester, Pa.

Flagg, Stanley G. & Co., Phila.

Gartland Foundry Co., Cleveland, O.

Haight & Clark, Albany, N. Y.

Hammer & Co., Branford, Conn.

Herrick, J. A., 224 Pearl St., N. Y.

Johnson, J. G. & Co., Spuyten Duyvil.

Mahoning & Dry Mfg. Co., Danville, Pa.

Parmers & De Mooy, Cleveland, O.

Sessions Foundry Co., Bristol, Conn.

Shilling Fdy. Co., Columbus, O.

Spencer's, J. S., Somers, N. Y.

Standard Fdy. & Mfg. Co., Cleveland, O.

Standard Steel Casting Co., Thurlow,
Pa.

Taylor Iron & Steel Co., High Bridge, N. J.

Totten & Hogg Iron & Steel Fdy. Co.,
Pittsburgh, Pa.

Union Mfg. Co., 103 Chambers St., N. Y.

Wetherill, Bobt. & Co., Chester, Pa.

Woodruff, W. W. & Sons, Mt. Carmel,
Conn.

Woods, C. & Co., Highbridge, Conn.

Wright, C. W., So. Norwalk, Conn.

Clipping Machines.

Hotchkiss, E. S., Bridgeport, Conn.

McCoy, Jos. F. & Co., 28 Warren St.

Coal.

Barnes, C. K. & Co., Philadelphia, Pa.

Wister, Francis, Philadelphia, Pa.

Clamps.

Hammer & Co., Branford, Conn.

Le Count, C. W., So. Norwalk, Conn.

Clipper.

Cushman Chuck Co., Hartford, Conn.

Smith & Egge Mfg. Co., Bridgeport.

Union Mfg. Co., 103 Chambers, N. Y.

Whitton, D. E. Mach. Co., New London,
Conn.

Coffee and Spice Mills.

Sun Mfg. Co., Greenfield, O.

Waddell Wooden Ware Works, Green-
field, O.

Coke.

Barnes, C. K. & Co., Philadelphia, Pa.

Houston, C. B. & Co., Philadelphia, Pa.

Rainey, W. J., Cleveland, O.

Sibell, Geo. H. & Co., Chicago, Ill.

Wister, Francis, Philadelphia, Pa.

Collections.

Hardware Board of Trade (Limited)

& 4 & Warren, N. Y.

Condensers.

Worthington, Henry R., 86 & 88 Liberty

Street, N. Y.

Conveying Machinery.

Brown Hoisting & Conveying Ma-
chine Co., Cleveland, Ohio.

Jeffrey Mfg. Co., Columbus, O.

Link Belt Engineering Co., Phila., Pa.

Copper.

Ames Sword Co., Chicopee, Mass.

Ansonia Brass & Copper Co., 19 and 21

Cliff, N. Y.

Hendricks Bros., 49 Cliff, N. Y.

New Haven Copper Co., 294 Pearl, N. Y.

Randolph & Clowes, Waterbury, Conn.

Wister, Francis, Philadelphia, Pa.

Coppersmith.

Emory, P. P. Mfg. Co., Springfield,

Mass.

Cordage.

Samson Cordage Works, Boston, Mass.

Cork Screws.

Williamson, C. T. Wire Novelty Co.

Newark, N. J.

Corrugated Furnaces.

Continental Iron Wks., Brooklyn, N. Y.

- Miner & Peck Mfg. Co., New Haven, Conn.**
- Stiles & Parker Press Co., Brooklyn, N. Y.**
- Vulcan Iron Works, Chicago, Ill.**
- Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.**
- Dumb Waiters.**
- Storm Mfg. Co., Newark, N. J.**
- Dust Beaters.**
- Peabody & Parks, Troy, N. Y.**
- Dynamite.**
- New York Powder Co., 62 Liberty St. N. Y.**
- Dynamics.**
- C. C. Electric Co., 402 and 404 Greenwich St., N. Y.**
- Detroit Dynamo Co., Detroit, Mich.**
- Lovell Mfg. Co., Ltd., Erie, Pa.**
- Zucker & Levett Chemical Co., 10 1/4 Grand St., N. Y.**
- Edge Tools. Makers of.**
- Buck Bros., Millbury, Mass.**
- Buffalo Edge Tool Wks., Ridgway, Pa.**
- Plumb, Fayette R., Philadelphia, Pa.**
- White, L. & I. J. Co., Buffalo, N. Y.**
- Edging Shears.**
- Dille & McGuire Mfg. Co., Richmond, Ind.**
- Egg Beaters.**
- North Bros. Mfg. Co., Philadelphia.**
- Electric Bells and Supplies.**
- Ostrander, W. R. & Co., 204 Fulton St., New York.**
- Wollensak, J. F., Chicago, Ill.**
- Electric Dynamo Machines.**
- Colburn Electric Mfg. Co., Fitchburg, Mass.**
- Sidd's Electric Mfg. Co., Windsor, Conn.**
- Hanson & Van Winkle Co., Newark, N. J.**
- Elevators. Makers of.**
- Link-Belt Engineering Co., Phila., Pa.**
- Morse, Williams & Co., Phila., Pa.**
- Salem F'dry & Mch. Co., Salem, Mass.**
- Emery and Emery Wheels.**
- Bell, Geo. E., 32 John St., N. Y.**
- Grant Corundum Wheel Mfg. Co., Worcester, Mass.**
- N. Y. Bunting & Packing Co., Ltd., N. Y.**
- Northampton Emery Wheel Co., Leeds, Mass.**
- Norton Emery Wheel Co., Worcester, Mass.**
- Enamel.**
- Nubian Iron Enamel Co., Cragin, Ill.**
- Engineers and Contractors.**
- Aiken Henry, Pittsburgh, Pa.**
- Archacial Gas Engineering Co., Pittsburgh, Pa.**
- Herrick, J. A., 284 Pearl St., N. Y.**
- Keaney, Julian, Pittsburgh, Pa.**
- Laughlin, Alex. & Co., Pittsburgh, Pa.**
- Lean, D. R. Co., Pittsburgh, Pa.**
- McClure, Amstel & Co., Pittsburgh, Pa.**
- Pittsburgh Iron & Steel Engineerin' Co., Pittsburgh, Pa.**
- Roberts, Frank C., Philadelphia, Pa.**
- Smythe, S. R. Co., Incorporated Pittsburgh, Pa.**
- Swindell, W. & Bros., Pittsburgh, Pa.**
- Witherow, Jas. P. Co., Pittsburgh, Pa.**
- Engines, Gas.**
- Otto Gas Engine Works, Phila., Pa.**
- Bellason Gas Engine, Havermeyer Bldg., N. Y.**
- Engines, Steam. Makers of.**
- Bass Foundry & Machine Works, Ft. Wayne, Ind.**
- Buckeye Engine Co., Salem, O.**
- Erie Engine Works, Erie, Pa.**
- Harrisburg Fly. & Machine Works, Harrisburg, Pa.**
- Lane & Bodley Co., Cincinnati, O.**
- Norwalk Iron Works Co., So. Norwalk, Conn.**
- Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.**
- Phila. Engineering Works, Phila., Pa.**
- Phoenix Iron Wks. Co., Meadville, Pa.**
- Southwick Foundry and Machine Co., Phila., Pa.**
- Ted, William & Co., Youngstown, O.**
- Wetherill, Robt. & Co., Chester, Pa.**
- Exhaust Tumblers.**
- Sweester, W. A., Brockton, Mass.**
- Expansion Bolts.**
- Boone, W. C. Mfg. Co., Boonton, N. J.**
- Church, Isaac, Toledo, O.**
- Steward & Romaine Mfg. Co., Phila., Pa.**
- Faucets, Self-Measuring, Lane Bros., Poughkeepsie, N. Y.**
- Faucets, Wooden. Makers of.**
- John Sommer's Son, Newark, N. J.**
- Feed-Water Heaters.**
- Davis, I. B. & Son, Hartford, Conn.**
- Goubert Mfg. Co., 32 Cortlandt St., N. Y.**
- Harrison Safety Boiler Wks., Phila., Pa.**
- National Pipe Bending Co., New Haven, Conn.**
- Webster, Warren & Co., Camden, N. J.**
- Whitlock Coll Pipe Co., Elmwood, Conn.**
- Fencing, Iron and Wire.**
- Sarnum, E. T., Detroit, Mich.**
- Champion Iron Co., Kenton, O.**
- Clinton Wire Cloth Co., Clinton, Mass.**
- Gilbert & Bennett Mfg. Co., 42 Cliff St., Kilmer Mfg. Co., Newburgh, N. Y.**
- Mast, Foos & Co., Springfield, O.**
- The Van Dorn Iron Works Co., Cleveland, O.**
- Bellance Wire & Iron Wks., Milwaukee, Wis.**
- Files, Importers of.**
- Moss, F. W., 80 John, N. Y.**
- Files and Knaps, Manufacturers of.**
- Arcade File Works, Anderson, Ind.**
- Sanker & White, Troy, N. Y.**
- Barnett, G. & H., 41 & 48 Richmond Phila.**
- McCaffrey File Co., Philadelphia.**
- Nicholson Mfg. Co., Providence, R. I.**
- Fire Brick, Makers of.**
- Borgner, Cyrus, Philadelphia, Pa.**
- Gardner, Jas. & Son, Cumberland, Md.**
- Kreisbauer B & Sons, foot E. Houston, St.**
- McLeod & Henry Co., Troy, N. Y.**
- Maurer, H. & Son, 420 E. 23d, N. Y.**
- Ostrander Fire Brick Co., Troy, N. Y.**
- Valentine, M. D. & Bro., Woodbridge.**
- Fire Sets.**
- Troy Nickel Works, Troy, N. Y.**
- Fishing Tackle.**
- Dame, Stoddard & Kendall, Boston, Mass.**
- Flint and Emery Paper.**
- Baeder, Adamson & Co., Phila., Pa.**
- Flour Sifters.**
- Meyers, F. J. Mfg. Co., Covington, Ky.**
- Flue Cleaners.**
- Mackey, Jas. T., St. Louis, Mo.**
- Fodder Cutters.**
- Silver Mfg. Co., Salem, O.**
- Foreign Periodicals.**
- Stechert, G. E., 810 Broadway, N. Y.**
- Forges, Portable, &c.**
- Bullock Bellows Co., Cleveland, O.**
- Buffalo Forge Co., Buffalo, N. Y.**
- Champion Blower & Forge Co., Lancaster, Pa.**
- Empire Portable Forge Co., Lansingburg, N. Y.**
- Enterprise Mfg. Co., Philadelphia, Pa.**
- Ette & Henger Mfg. Co., St. Louis, Mo.**
- Gwinnett Mfg. Co., Hamilton, O.**
- Haines & Zimmerman, Phila., Pa.**
- Hart, H. C. Mfg. Co., Detroit, Mich.**
- Johnson, S. C., Racine, Wis.**
- Knapp & Cowles Mfg. Co., Bridgeport, Conn.**
- North Bros. Mfg. Co., Philadelphia, Pa.**
- Peabody & Parks, Troy, N. Y.**
- Welland Chas., 149 Chambers St., N. Y.**
- Wilson, J. Fred, Worcester, Mass.**
- Forgings, Iron and Steel.**
- Bethlehem Iron Co., S. Bethlehem, Pa.**
- Cambridge Steel—Cambridge Iron Co., Johnstown, Pa.**
- Frankford Steel Co., Phila., Pa.**
- Granron Forging Co., Scranton, Pa.**
- U. S. Projectile Co., Brooklyn, N. Y.**
- Foundry Facings.**
- S. Obermayer Co., Cincinnati, O.**
- Smith, J. D. Fly. Supply Co., Cincinnati, O.**
- Foundry Riddles.**
- Este, W. S., 65 Fulton, N. Y.**
- Foundry Supplies.**
- Colliou, Victor, Detroit, Mich.**
- Diamond Clamp & Flask Co., Richmond, Ind.**
- S. Obermayer Co., Cincinnati, O.**
- Smith, J. D. Fly. Supply Co., Cincinnati, O.**
- Friction Clutches.**
- Keystone Clutch & Mch. Wks., Phila., Pa.**
- Moore & White Co., Philadelphia, Pa.**
- Friction Cone.**
- Evans Friction Cone Co., Boston, Mass.**
- Fruit Presses.**
- Enterprise Mfg. Co., Philadelphia, Pa.**
- Furnaces, Foundry.**
- Byram & Co., Detroit, Mich.**
- Gas Producers.**
- Wood, R. D. & Co., Philadelphia, Pa.**
- Gas & Steam Fitters' Supplies.**
- Panocost, Henry B. & Co., Phila., Pa.**
- Gauge, Rolling Mill.**
- Haines Gauge Co., Philadelphia, Pa.**
- Gear Cutters.**
- D. E. Whilton Mach. Co., New London, Conn.**
- Gears.**
- Boston Gear Works Boston, Mass.**
- Poole, Robt. & Son Co., Baltimore, Md.**
- U. S. Projectile Co., Brooklyn, N. Y.**
- Glass Beards.**
- Canton Saw Co., Canton, O.**
- Glass Cutters.**
- Monce, S. G., Bristol, Conn.**
- Glass Tubes.**
- Ashforth Mfg. Co., 111 Liberty St., N. Y.**
- Glue.**
- Baeder, Adamson & Co., Phila., Pa.**
- Russia Cement Co., Gloucester, Mass.**
- Grass Catchers.**
- Supply Hardware Co., Phila., Pa.**
- Grinding and Polishing Machines.**
- Herrick & Cowell, New Haven, Conn.**
- Norton Emery Wheel Co., Worcester, Mass.**
- Washburn Shops, Worcester, Mass.**
- Grinding Mills.**
- Foos Mfg. Co., Springfield, O.**
- Grindstone Dressing Machinery.**
- Blake & Johnson, Waterbury, Conn.**
- Grindstones.**
- Cleveland Stone Co., Cleveland, O.**
- Gun Implements.**
- Union Hdw. Co., Torrington, Conn.**
- Gunpowder, Makers of.**
- Lafkin & Rand Powder Co., 29 Murray St., N. Y.**
- Hand Carts.**
- Lansing Wheelbarrow Co., Lansing, Mich.**
- Handles.**
- New York Mallet and Handle Wks., 456 E. Houston St., N. Y.**
- Injectors.**
- Eynon-Evans Mfg. Co., Philadelphia, Pa.**
- Jenkins Bros., New York**
- Sherwood Mfg. Co., Buffalo, N. Y.**
- Insurance, Boiler.**
- Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.**
- Iron and Steel, Swedish.**
- Lundberg, Gustaf, Boston, Mass.**
- Milne, A. & Co., 1 Broadway, N. Y.**
- Iron Commission Brokers.**
- Corning, Edw. & Co., 29 B'way, N. Y.**
- Ootton, Barclay W. & Co., Phila.**
- Etting, Edw. J., Philadelphia.**
- Hogan, John L. & Co., Philadelphia, Pa.**
- Hoffman, J. W. & Co., Philadelphia.**
- Levis, Henry & Co., Philadelphia.**
- Kealey, Jerome & Co., Philadelphia.**
- Lea, J. Tatnall & Co., Philadelphia.**
- Mohr, J. J., 430 Walnut, Philadelphia.**
- Pilling & Crane, Philadelphia, Pa.**
- Sibell, Geo. H. & Co., Chicago, Ill.**
- Wister, L. & R. & Co., Phila., Pa.**
- Iron Ore.**
- Naylor & Co., 45 Wall, N. Y.**
- Puliman, J. Wesley, Phila., Pa.**
- Samuel, Frank, Philadelphia, Pa.**
- Iron, Merchants.**
- Barnes, C. K. & Co., Philadelphia, Pa.**
- Borden & Lovell, 70 West, N. Y.**
- Bussenus & Gunliffe, Philadelphia.**
- Corning Edw. & Co., 29 B'way, N. Y.**
- Cox, Justice, Jr., Philadelphia.**
- Cotton, Barclay W. & Co., Phila.**
- Hoffman, J. W. & Co., Philadelphia.**
- Leonard, J., 446 West St., N. Y.**
- Naylor & Co., 45 Wall St., N. Y.**
- Nicolls, Wheeler & Co., Philadelphia.**
- Ogden & Wallace, 85 Elm St. N. Y.**
- Pierson & Co., 29 Broadway, N. Y.**
- Thomson, W. H. & Co., Phila., Pa.**
- Wallace, Wm. H. & Co., Albany & Washington streets, N. Y.**
- Whitney, A. R. & Co., 17 B'way, N. Y.**
- Wilson, G. H. & Co., Philadelphia.**
- Iron, Importers.**
- Abbott Wheelock & Co., N. Y., and Boston**
- Lundberg, Gustaf, Boston, Mass.**
- Iron, Sheet, Manufacturers of.**
- Cambridge Iron & Steel Co., Cambridge, Ohio**
- W. Dewees Wood Co., Lim., McKeesport, Pa.**
- Ironwork, Ornamental.**
- Barnum, E. T., Detroit, Mich.**
- Champion Iron Co., Kenton, O.**
- Ludlow-Saylor Wire Co., St. Louis, Mo.**
- Mast, Foss & Co., Springfield, O.**
- The Van Dorn Iron Works Co., Cleveland, O.**
- ettle Bottom.**
- Diamond Hdw. Co., Boston, Mass.**
- Keys.**
- Wollensak, J. F., Chicago, Ill.**
- Ladders, Rolling.**
- Coburn Trolley Track Mfg. Co., Holyoke, Mass.**
- Ladies.**
- Reider Fly. Equipment Co., Detroit, Mich.**
- Lamp Stoves.**
- Glaizer Stove Co., Chelsea, Mich.**
- Lamps.**
- Standard Lighting Co., Cleveland, O.**
- Lanterns.**
- Buhl Stamping Co., Detroit, Mich.**
- Steam Gauge & Lantern Co., Syracuse, N. Y.**
- Lathes.**
- Draper Machine Tool Co., Worcester, Mass.**
- Johnson, Israel H., Jr., & Co., Philadelphia, Pa.**
- Seneca Falls Mfg. Co., Seneca Falls N. Y.**
- Lathing, Wire.**
- Clinton Wire Cloth Co., Clinton, Mass.**
- N. J. Wire Cloth Co., Trenton, N. J.**
- Wright & Colton Wire Cloth Co., Worcester, Mass.**
- Laundry Machines.**
- Johnson, S. C., Racine, Wis.**
- Lawn Mowers.**
- Chadborn & Coldwell Mfg. Co., Newburg, N. Y.**
- Champion Mfg. Co., Richmond, Ind.**
- Colwell Lawn Mower Co., Newburg, N. Y.**
- Dille & Anderson, Richmond, Ind.**
- Dille & McGuire Mfg. Co., Richmond, Ind.**
- F. & N. Mfg. Co., Richmond, Ind.**
- Henley, M. C., Richmond, Ind.**
- Mast, Foss & Co., Springfield, O.**
- Searns, E. C. & Co., Syracuse, N. Y.**
- Supplies Hdw. Co., Phila., Pa.**
- Lawn Rakes.**
- Gibbs Mfg. Co., Canton, Ohio.**
- Kohler, F. E. & Co., Canton, O.**
- Schaeffer & Co., Dayton, Ohio.**
- Syracuse Specialty Mfg. Co., Syracuse N. Y.**
- Lawn Sprinklers.**
- Erie & Henger Mfg. Co., St. Louis.**
- Gibbs Mfg. Co., Canton, Ohio.**
- McGowan, John H. Co., Cincinnati.**
- Portland Lawn Sprinkler Co., Portland, Me.**
- Leather Parts.**
- Greene, J. Frank & Co., 27d Water St., New York.**
- Lemon Squeezers.**
- Ripley Mfg. Co., Unionville, Conn.**
- Letters and Figures, Metallic.**
- White, A. A. & Co., Providence, R. I.**
- Letters, Paper.**
- Tablet & Ticket Co., Chicago, Ill.**
- Levels.**
- Davis & Cook, Watertown, N. Y.**
- Richardson, C. F., & Son, Athol, Mass.**
- Locks & Knobs, Manufacturers of.**
- Deitz, A. E., 97 Chambers, N. Y.**
- Keyless Lock Co., Chicago, Ill.**
- Reading Hdw. Co., Reading, Pa.**
- Smith & Egge Mfg. Co., Bridgeport, Conn.**
- Yale & Towne Mfg. Co., Stamford, Conn.**

See Alphabetical Index, Pages 105 & 106.

Machinery.

Am. Tool Works, Cleveland, Ohio.
Barnes, W. F. & John, Rockford, Ill.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 46 Dey, N. Y.
Bignal & Keeler Mfg. Co., St. Louis.
Birmingham Iron Foundry, Birmingham, Conn.
Biss, E. W. Co., Brooklyn, N. Y.
Bogert, Jno. L., Flushing, N. Y.
Briggs, Marvin, 12 Broadway, N. Y.
Carlin's Sons, Thos., Allegheny, Pa.
China Milling Mch. Co., Cincinnati, Ohio.
Clapp, Geo. M., agt., 74 Cortlandt, N. Y.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Derrick & Harvey Mch. Co., Baltimore, Md.
Fitchburg Mch. Works, Fitchburg, Mass.
Garvin Mch. Co., Laight & Canal Sts.
Gould & Eberhardt, Newark, N. J.
Hamilton Mch. Tool Co., Hamilton, O.
Harrington, E. Son & Co., Phila., Pa.
Hoover Machine Co., Torrington, Ct.
Will Clarke & Co., Boston, Mass.
Howard & Morse, 45 Fulton St., N. Y.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield, Vt.
Lovegrove & Co., Philadelphia, Pa.
McColl, J. J., 68 Cortlandt, N. Y.
Machine Supply Co., Rochester, N. Y.
Manville, E. J. Mch. Co., Waterbury, Conn.
National Machinery Co., Tiffin, Ohio.
Newark Mch. Tool Works, Newark, N. J.
New Haven Mfg. Co., New Haven, Conn.
Niles Tool Wks., 188 Liberty St., N. Y.
Pittsburgh Mch. Co., Pittsburgh, Pa.
Place, G. S., 20 Broadway, N. Y.
Pools, Robt. & Son Co., Baltimore, Md.
Powell Planer Co., Worcester, Mass.
Pratt & Whitney Co., Hartford, Conn.
Pratt's Tool & Supply Co., N. Y.
Scranton Supply & Mchry. Co., Scranton, Pa.
Sellers, Wm. & Co., Phila.
Seifert's Sons L. F., Philadelphia, Pa.
Steppe, J. & Co., Cincinnati, O.
Stow Flexible Shaft Co., Ltd., Phila.
Toomey, Frank, Philadelphia, Pa.
Wetherill, Robert A., Oneonta, Pa.
Wickes Bros., Saginaw, Mich.
Wilson, W. A., Rochester, N. Y.

Machinery for Hardware Manufacture.

Adt, Jno. & Son, New Haven, Conn.

Machine Knives.

Loring Coes & Co., Worcester, Mass.
Loyd, John, 558-562 Water St., N. Y.

Machine Tools.—See Machinery.**Machine Work.**

Papping, J., 58th St., & 11th Ave., N. Y.
City.

Machinists' Scales.

Coffin & Leighton, Syracuse, N. Y.
Starrett, L. S., Athol, Mass.
Valentine Tool Co., Hartford, Conn.

Machinists' Tools and Supplies.

King, J. M. & Co., Waterford, N. Y.

Sellers, Wm. & Co., Inc., Phila.

Mallets.

N. Y. Mallet & Handle Works, N. Y.
Mangies,

Johnson, S. C., Racine, Wis.

Measuring Tapes.

Kaufel & Ester Co., 127 Fulton St., N. Y.

Lufkin Rule Co., Saginaw, Mich.

Meat Cutters and Stuffers.

Enterprise Mfg. Co., Philadelphia, Pa.

Mechanical Instruction.

Correspondence School of Mechanics

Scranton, Pa.

Metals.

Fearing, Wm. S., 100 Chambers, N. Y.
Hendrick Bros., 49 Cliff, N. Y.

Naylor & Co., 45 Wall, N. Y.

Metal Brokers.

American Metal Co., N. Y.

Metallurgists.

Britton J. Blodgett, Phila.

Milling Machines.

Cin. Milling Mch. Co., Cincinnati, Ohio.

Mincing Knives.

Palmer Hdw. Mfg. Co., Troy, N. Y.

Mine Lamps.

Darby, Edw. & Sons Phila., Pa.

Leonard, B. E., Scranton, Pa.

Mining Screens.

Harrington & King Perforating Co.

Chicago, Ill.

Howard & Morse, 45 Fulton, N. Y.

Models, Makers of.

Franklin, H. H. Mfg. Co., Syracuse, N. Y.

Molding Sand.

Obermayer, S. Co., Cincinnati, O.

Money Drawers.

Sun Mfg. Co., Greenfield, O.

Waddell Wooden Ware Works, Greenfield, O.

Motors, Water and Electric.

O. & C. Electric Co., 402 and 404 Greenwich St., N. Y.

Dallett, Thos. H. & Co., Phila., Pa.

Nail Machinery.

Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nails (Cut) and Spikes.

Borden & Lovell, 70 West, N. Y.

Cumberland Nail & Iron Co., Phila.

Oxford Iron Co., 81 Washington, Pottstown Iron Co., Pottstown, Pa.

Riverside Iron Wks., Wheeling, W. Va.

Sickel Platers' Supplies.

Colburn Electric Mfg. Co., Fitchburg, Mass.
Eddy Electric Mfg. Co., Windsor, Conn.
Hanson & Van Winkle Co., Newark, N. J.
Zucker & Levett Chemical Company, 10 to 14 Grand St., N. Y.

Terway Shapes, Rollers of.

Rowland, William & Harvey, Franklin, Philadelphia.

Novelty Manufacturers.

Franklin, H. H. Mfg., Syracuse, N. Y.

Nut Machines.

Dunham Nut Mch. Co., Unionville, O.

Nuts, Bolts, &c., Makers of.

American Bolt Co., Lowell, Mass.

American Screw Co., Providence, R. I.

Blake & Johnson, Waterbury, Conn.

Haskell, Wm. H. Co., Pawtucket, R. I.

Mt. Carmel Bolt Co., Mt. Carmel, Conn.

Port Chester Bolt and Nut Co., Chester, N. Y.

Russell, Burdick & Ward, Port Chester, N. Y.

Sternberg, J. H. & Son, Reading, Pa.

Wilson, J. Fred., Worcester, Mass.

Wm. H. Haskell Co., Pawtucket, R. I.

Oil Cups and Lubricators.

Sherwood Mfg. Co., Buffalo, N. Y.

Oilers.

Wilmet & Hobbs Mfg. Co., Bridgeport, Conn.

Oil Stones.

Pike Mfg. Co., Pike Station, N. H.

Oil Stoves.

Foster Stove Co., Ironton, O.

Glazier Stove Co., Chelsea, Mich.

Ores.

Wister, Francis, Philadelphia, Pa.

Ox Shees.

Scranton Forging Co., Scranton, Pa.

Packing.

Morrison, Robt., St. Louis, Mo.

N. Y. Belting & Packing Co., Ltd., N. Y.

Padiackes.

Ames Sword Co., Chicopee, Mass.

Fraim, E. T., Lancaster, Pa.

Hillebrand & Wolf, Phila., Pa.

Miller Lock Co., Philadelphia, Pa.

Paint.

Dixon, Jos. Crucible Co., Jersey City, N. J.

Garry Iron & Steel Roofing Co., Cleveland, O.

Paint Burners.

Dangler Stove & Mfg. Co., Cleveland, O.

Paint Cans.

Wilmet & Hobbs Mfg. Co., Bridgeport, Conn.

Paint Stretcher.

Covert Mfg. Co., West Troy, N. Y.

Patent Solicitors.

Howson & Howson, Phila. & Wash'gton.

Jenner, H. W. T., Washington, D. C.

Stocking, E. B., Washington, D. C.

Perforated Metal.

Clinton Wire Cloth Co., Clinton, Mass.

Harrington & King Perforating Co., Ullaco, Ill.

Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Phosphor Bronze.

Phosphor Bronze Smelting Co., Limited, 513 Arch, Philadelphia.

Phosphor Tin.

Crescent Phosphatized Metal Co., Philadelphia, Pa.

Croby Steam Gage & Valve Co., Boston, Mass.

Halk & Naumann, 516 Pearl, N. Y.

Picks and Mattocks.

Plumb, Fayette, N. Phila., Philadelphia, Pa.

Pig Iron.

Houston, C. B. & Co., Philadelphia, Pa.

Montgomery Iron & Steel Co., Danville, Pa.

Naylor & Co., 45 Wall, N. Y.

Piling & Crane, Philadelphia, Pa.

Samuel, Frank, Philadelphia, Pa.

Pig Iron Storage.

Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.

Pile Drivers.

Vulcan Iron Wks., Chicago, Ill.

Pipe Bent.

National Pipe Bending Co., New Haven

Pipe Cutting and Threading Machines.

Bignal & Keeler Mfg. Co., St. Louis, Mo.

Merrill Mfg. Co., Toledo, O.

Pancoast Henry B. & Co., Philadelphia, Pa.

Sander's Sons, D., Yonkers, N. Y.

Pipe Grips.

Frentiss Vice Co., 44 Barclay, N. Y.

Pipes, Fittings, &c., Makers of.

McNab & Harlin Mfg. Co., N. Y.

Pipes, Water and Gas.

Umbrall & Nall & Iron Co., Phila., Pa.

Donaldson Iron Co., Emmaus, Pa.

Riverside Iron Works, Wheeling, W. Va.

Wood, R. D. & Co., Philadelphia, Pa.

Plane Irons.

Manufacturers of.

Buck Bros., Millbury, Mass.

Plane Makers.

Stanley Rule & Level Co., N. Y.

Plated Ware.

Boardman, L. & Son, New Haven, Ct.

Holmes & Edwards Silver Co., Bridgeport, Conn.

Rogers, Wm. Mfg. Co., Hartford, Ct.

Rogers & Hamilton, Waterbury, Ct.

Upson & Hart Co., Unionville, Ct.

Plate Iron and Steel.

Mrs. of Extra-Standard Iron & Steel Co., Bridgeport, O.

Lukens Iron & Steel Co., Coatesville, Pa.

Plates.

Johns, W. F. & Son, Rockford, Ill.

Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Seythe Stone and Whetstone.

Pike Mfg. Co., Pike Stn., N. H.

Cleveland Stone Co., Cleveland, O.

Shafting.

Makers of.

Cresson, Geo. V., Philadelphia, Pa.

Fairmount Mch. Co., Philadelphia, Pa.

Fitzsimons & Co., Cleveland, Ohio.

Sellers, Wm. & Co., Inc., Phila., Pa.

Stow, C. Co. Mfg., Binghamton, N. Y.

Shaped Iron and Steel.—Manufacturers of.

Extra-Standard Iron & Steel Co., Bridgeport, O.

Mahoning Valley Iron Co., Youngstown, Ohio.

Moorehead-McLean Co., Pittsburgh, Pa.

McIlvain & Sons, Reading, Pa.

Pottstown Iron Co., Pottstown, Pa.

Pottsville Iron & Steel Co., Pottsville, Pa.

- Allentown Rolling Mill, Allentown, Pa.**
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
Pottsville Iron & Steel Co., Pottsville, Pa.
Roberts, A. & P. & Co., Phila., Pa.
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Tudor Iron Works, St. Louis, Mo.
- Shears and Scissors.**
Acme Shear Co., Bridgeport, Conn.
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Aetna-Standard Iron and Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Chess Bros., Pittsburgh, Pa.
Mahoning Valley Iron Co., Livingston, Ohio.
Moore-McCleane Co., Pittsburgh,
Pierson & Co., 29 Broadway, N.Y.
Ringer, Nimick & Co., Ltd., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewey Wood Co., McKeesport, Pa.
- Sheet Metal Work.**
Clark & Cowles, Plainville, Conn.
- Sheet Zinc.**
Matthiessen & Hegeler Zinc Co., La Salle, Ill.
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Barney & Berry, Springfield, Mass.
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Cleveland Stamping & Tool Co., Cleveland, O.
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Ashcroft Mfg. Co., 111 Liberty St., N.Y.
Bristol Mfg. Co., Waterbury, Conn.
- Steam Hammers, &c., Makers of.**
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N.Y.
Trethewey Mfg. Co., Pittsburgh, Pa.
- Steam Heating.**
Webster Warren & Co., Camden, N.J.
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Milne, A. & Co., 1 Broadway, N.Y.
Newton & Shipman, 83 John, N.Y.
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Whitney, A. R. & Co., B'dway, N.Y.
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Jones, E. M. & Co., Boston.
- Steel Manufacturers.**
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Bethlehem Iron Co., S. Bethlehem, Pa.
Boker, Herman & Co., 103 Duane St., Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N.Y.
Crescent Steel Co., Pittsburgh, Pa.
Eiken & Co., Hagen, Germany.
Frankford Steel Co., Philadelphia.
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La Belle Steel Co., Pittsburgh, Pa.
Luken's Iron & Steel Co., Coatesville, Pa.
Moorhead-McCleane Co., Pittsburgh, Pa.
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Naylor & Co., 48 Wall, N.Y.
Potzaville Iron and Steel Co., Potzville, Pa.
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Singer, Nimick & Co., Pittsburgh.
Stanley Works, New Britain, Conn.
Steel & Iron Improvement Co., Pitts
burgh, Pa.
Taylor Iron & Steel Co., High Bridge, N.J.
Wickwire, S. & C., Sheffield, Eng.
Wetherell Bros., 93 Liberty, N.Y.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
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Barnes, C. K. & Co., Philadelphia, Pa.
Corning, Edw. & Co., 29 B'way, N.Y.
Frassie Co., 19 Warren St., New York.
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Pierson & Co., 29 Broadway, N.Y.
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Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Iron Co., Johnstown, Pa.
Montour Iron & Steel Co., Danville, Pa.
Riverside Iron Wks., Wheeling, W.Va.
- Steel, Tool.**
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, Eng. land, 91 John, N.Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.
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Bicycle Step Ladder Co., Chicago, Ill.
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- Stocks and Dies.**
Armstrong Mfg. Co., Bridgeport, Conn.
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Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunders' Sons, D., Yonkers, N.Y.
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Wiley & Russell Mfg. Co., Greenfield Mass.
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- Steve Pipe Thimbles.**
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Berlin Iron Bridge Co., East Berlin, Conn.
Boston Bridge Wks., Boston, Mass.
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Clendenin Bros., Baltimore, Md.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Nat. Screw & Tack Co., Cleveland, O.
Phillips, E. & Sons, South Hanover.
- Taps and Dies.**
Butterfield & Co., Derby Line, Vt.
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Wells Bros. & Co., Greenfield, Mass.
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- Testing Machines.**
Richie Bros. Testing Mch. Co., Phila.
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- Thill Springs.**
Frost Thill Spring Co., Boston, Mass.
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- Time Record.**
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Berger Bros., Philadelphia, Pa.
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- Tinware.**
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Burke, P. F., Boston, Mass.
- Tool Chests.**
Am. Tool Co., 200 W. Houston St., N.Y.
- Tools.**
Britton, Horace E., Stoughton, Mass.
Brown, R. H. & Co., New Haven, Conn.
Frassie Co., 19 Warren St., New York.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Miller's Falls Co., 98 Read, N.Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 39 Chambers, Starrett, L.S., Athol, Mass.
Tower & Lyon, 95 Chambers St., N.Y.
- Tools, Blacksmith and Wheelwrights.**
Buffalo Forge Co., Buffalo, N.Y.
Butts & Ordway, Boston, Mass.
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Plumb, Fayette R., Philadelphia, Pa.
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Berger Bros., Philadelphia, Pa.
Clark, G. P., Windsor Locks, Conn.
Lansing Wheelbarrow Co., Lansing, Mich.
- Tubes, Seamless Drawn Copper.**
Ansonia Brass & Copper Co., 19 and 21 Cliff, N.Y.
Randolph & Clowes, Waterbury, Conn.
- Tubes, Steel.**
Ellwood Shafting & Tube Co., Ellwood City, Pa.
Leng's John S. Son & Co., 4 Fletcher St., N.Y.
Shelby Steel Tube Co., Shelby, O.
U. S. Projectile Co., Brooklyn, N.Y.
- Tumbling Barrels.**
Henderson Bros., Waterbury, Conn.
- Turnbuckles.**
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E.D.
- Twist Drills, Makers of.**
Cleveland Twist Drill Co., Cleveland, O.
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- Valves, Gas, Water and Steam.**
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Eynon-Evans Mfg. Co., Philadelphia, Pa.
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McNab & Mfg. Co., 56 John, N.Y.
Mason Regulator Co., Boston, Mass.
- Ventilating Fans.**
Buyett & Smith Mfg. Co., Detroit, Mich.
- Ventilator Appliances.**
Howard & Morse, 48 Fulton, N.Y.
- Vise Jaws.**
Newark Mch. Tool Co., Newark, N.J.
- Vises.**
Capital Mch. Tool Co., Auburn, N.Y.
Hollands Mfg. Co., Erie, Pa.
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Millers Falls Co., 93 Read, St., N.Y.
Prentiss Vise Co., 44 Barclay N.Y.
Tower & Lyon, 95 Chambers St., N.Y.
Van Wagoner & Williams Co., 14 Warren St., N.Y.
- Wagon Jacks.**
Coverdell Mfg. Co., West Troy, N.Y.
Coverdell Saddlebod Works, Farmer, N.Y.
- Washers.**
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Milton Mfg. Co., Milton, Pa.
Sternbergh, J. H. & Son, Reading, Pa.
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- Wheelbarrows.**
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- Cockburn Barrow & Mch. Co., Jersey City, N.J.**
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Lansing Wheelbarrow Co., Lansing, Mich.
Sidney Steel Scraper Co., Sidney, O.
Toledo Wheelbarrow Works, Toledo, Ohio.
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Samson Cordage Works, Boston, Mass.
- Wire, Manufacturers of.**
Consolidated Steel & Wire Co., St. Louis, Mo.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N.Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven, Conn.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N.J.
Waterbury & Moon Mfg. Co., Worcester, Mass.
Wetherell Bros., 93 Liberty St., N.Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N.Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
- Wire Cloth.**
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
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Estey, W. S., 65 Fulton, N.Y.
Gilbert & Bennett Mfg. Co., 42 Cliff.
Howard & Morse, 45 Fulton, N.Y.
N. J. Wire Cloth Co., Trenton, N.J.
Reliance Wire & Iron Wks., Milwaukee, Wis.
Scheeler & Sons, Buffalo, N.Y.
Wickwire Bros., Cortland, N.Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleved.
- Wire Cutters.**
Higganum Hdwy. Co., Higganum, Conn.
Cronk Hanger Co., Elmira, N.Y.
King, J. M. & Co., Watertown, N.Y.
- Wire Dies.**
McFarland, Wm., Trenton, N.J.
Newton & Shipman, 83 John, N.Y.
- Wire Fences.—See fencing, Iron and Wire.**
- Wire Goods, Manufacturers of.**
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N.Y.
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Ossawam Mills Co., Norwich, Conn.
Scheeler & Sons, Buffalo, N.Y.
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Phillips, Townsend & Co., Phila., Pa.
Salem Wire Nail Co., Salem, O.
Whitney, A. R. & Co., New York City.
- Wire Rods, Steel.**
Consolidated Steel & Wire Co., St. Louis, Mo.
New Castle Wire Nail Co., New Castle, Pa.
Washburn & Moon Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 B'way, N.Y.
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Broderick & Bascom Rope Co., St. Louis, Mo.
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Washburn & Moon Mfg. Co., Worcester, Mass.
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Billings, Spencer & Co., Hartford, Conn.
Coe's Wrench Co., Worcester, Mass.
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Trimont Mfg. Co., Roxbury, Mass.
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Arcade Malleable Iron Co.	23	Cambridge Roofing Co.	15	Diamond Hardware Co.	84	Hazard Mfg. Co.	6
Armstrong Mfg. Co.	42	Canfield, H. O.	38	Diamond State Iron Co.	91	Heinisch's R. Sons Co.	71
Artificial Gas Engineering Co.	29	Canton Saw Co.	73	Dienelt & Eisenhardt.	43	Hender, A. L.	43
Ashcroft Mfg. Co.	34	Capewell Horse Nail Co.	92	Dille & Anderson.	97	Henderson Bros.	25
Atlas Mfg. Co.	87	Capital Machine Tool Co.	64	Disston, Henry & Sons.	67	Hendey Machine Co.	60
Atlas Tack Corporation.	11	Carbon Steel Co.	20	Dixon, Jos., Crucible Co.	38	Hendricks Bros.	
Babcock & Wilcox Co.	35	Carlin's Sons, Thomas.	53	Donaldson Iron Co.	28	Hendrick Mfg. Co., Ltd.	
Raeader, Adamson & Co.	62	Carpenter, J. M. Tap & Die Co.	107	Doscher, Martin.	71	Hendryx, A. B. Co.	3
Banker & White.	69	Cary, Alanson.	5	Douglas, W. & B.	64	Henly, M. C.	77&98
Bardsley, J.	94	Chadborne & Coldwell Mfg. Co.	98	Draper Machine Tool Co.	53	Herrick & Cowell.	51
Barns, C. K. & Co.	21	Chambers Bros. Co.	100	Dudgeon, Richard.	44	Herrick, J. A.	26
Barnes, W. F. & John.	41	Champion Blower & Forge Co.	46	Durbar Bros.	5	Hertz, T. & Son.	4
Barnett, G. & H.	69	Champion Iron Co.	7	Dunham Nut Machine Co.	44	Higganum Hdw. Co.	69
Barney & Berry.	78	Champion Mfg. Co.	99	Durant, W. N.	36	Hillebrand & Wolf.	39
Barnum, E. T.	9	Chapman Mfg. Co.	108	Dwight Slate Machine Co.	42	Hill, Clarke & Co.	54
Bass Foundry & Machine Works.	33	Chapman Valve Mfg. Co.	33	Eagle Anvil Works.	73	Hobson, F., Seaman & Co.	18
Belden Machine Co.	41	Chatillon, John & Sons.	81	Eagle Bicycle Mfg. Co.	107	Hoeffig, C. W.	68
Bell, Geo. E.	51	Cheney, S. & Son.	23	Eccles, Richard.	89	Hoffman, C & A.	70
Bellevue Pump Co.	65	Chess Bros.	23	Eddy Electric Mfg. Co.	30	Hoffman, J. W. & Co.	17
Bement, Miles & Co.	43	Chester Steel Casting Co.	25	Edge Moor Iron Co.	28	Hogan, John L. & Co.	17
Bemis & Call Hardware & Tool Co.	94	Chicago Spring Butt Co.	88	Eicken & Co.	19	Hollands Mfg. Co.	65
Berger Bros.	65	Chrome Steel Works.	24	Electric Cutlery Co.	72	Holmes & Edwards Silver Co.	74
Berlin Iron Bridge Co.	10	Church, Isaac.	100	Ellwood Shafting & Tube Co.	20	Holt, Hiram & Co.	88
Best, Fox & Co.	3	Cincinnati Corrugating Co.	6	Emory, P. P. Mfg. Co.	11	Hooker-Colville Steam Pump Co.	53
Bethlehem Iron Co.	21	Cincinnati Mfg. Co.	84	Empire Portable Forge Co.	95	Hotchkiss, E. S.	80
Bevin Bros. Mfg. Co.	79	Cincinnati Milling Mch. Co.	52	Enterprise Mfg. Co. of Pa.	82	Houston, C. B. & Co.	17
Bickford Drill & Tool Co.	48	Clafien Mfg. Co.	38	Erie Engine Works.	34	Howard Iron Works.	73
Bicycle Step Ladder Co.	88	Clapp, Geo. M.	54	Esteys, W. S.	12	Howard & Morse.	7
Bigelow, C. R.	51	Clark & Dunbar.	63	Ette & Henger Mfg. Co.	96	Howson & Howson.	6
Bignal & Keeler Mfg. Co.	45	Clendenin Bros.	12	Etting, Edw. J.	17	Huyett & Smith Mfg. Co.	43
Billings & Spencer Co.	94	Cleveland Block Co.	87	Eureka Cast Steel Co.	108	Ideal Mfg. Co.	73
Bingham, W. Co.	72	Cleveland City Forge & Iron Co.	1	Evans-Friction Cone Co.	3	Illinois Pure Aluminum Co.	88
Birmingham Iron Foundry.	23	Cleveland Rubber Works.	82	Ferdinand, L. W. & Co.	79	Indiana Wire Fence Co.	7
Bissell, E. Son & Co.	55	Cleveland Stamping & Tool Co.	77	Ferracuta Machine Co.	58	Ives, H. B. & Co.	94
Blake & Johnson.	12	Cleveland Stone Co.	51	Field, Alfred & Co.	70	Jacobus, W. H.	100
Bliss Co., E. W.	39	Cleveland Twist Drill Co.	50	Fitch, W. & E. T.	107	Jarecki Mfg. Co.	42
Boardman, L. & Son.	74	Clinton Wire Cloth Co.	8	Fairmount Machine Co.	49	Jeffrey Mfg. Co.	37
Bogert, John L.	51	Cobb & Drew.	9	Fay, J. A. & Egan Co.	48	Jenkins Bros.	1
Boker, Hermann & Co.	18	Colburn, A. M.	46	Fearing, Wm. S.	2	Jenkins & Lingle.	41
Boone, W. C. Mfg. Co.	25	Colburn Electric Mfg. Co.	30	Ferdinand, L. W. & Co.	79	Jenner, H. W. T.	6
Booth, The Lloyd Co.	28	Colby Wringer Co.	86	Ferracuta Machine Co.	58	Jessop, Wm. & Sons.	18
Borden & Lovell.	11	Coldwell Lawn Mower Co.	96	Field, Alfred & Co.	70	Johns, H. W. Mfg. Co.	15
Borgner, Cyrus.	28	Colliau, Victor.	29	Fitchburg Machine Works.	43	Johnson, I. G. & Co.	108
Boston Bridge Works.	15	Columbian Sash & Door Lock Co.	84	Fitzsimons & Co.	17	Johnson, I. H., Jr., & Co.	48
Boston Gear Works.	34	Conroy, P. J. & Co.	66	Flagg, Stanley G. & Co.	108	Johnson, S. C.	93
Box, Alfred & Co.	46	Crofton Trolley Track Mfg. Co.	85	Garrison, A., Foundry Co.	23	Jones, B. M. & Co.	21
Boyce Rivet Co.	108	Continental Iron Works.	33	Garry Iron & Steel Rfg. Co.	9	Jones & Lamson Machine Co.	60
Bradley & Co.	16	Corbin, P. & F.	85	Gartland Foundry Co.	25	Kayser, Ellison & Co.	18
Brass Goods Mfg. Co.	2	Cornling, Edw. & Co.	16	Garvin Machine Co.	54	Keeley, Jerome & Co.	17
Bridgeport Chain Co.	72	Correspondence School of Mechanics	107	Gauthier Steel Department.	15	Kennedy, Julian.	26
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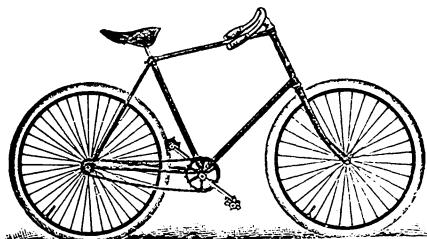
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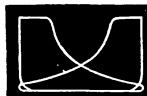
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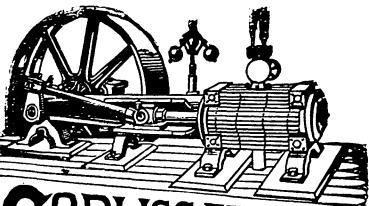
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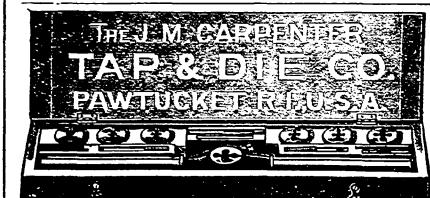
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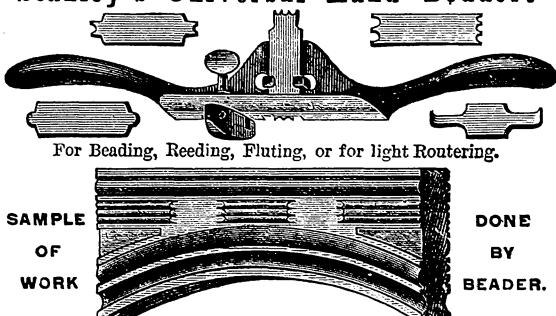
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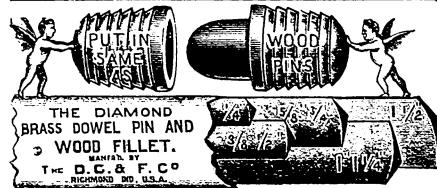
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THE IRON AGE

THURSDAY, DECEMBER 21, 1893.

Steam Driven Splice Bar Punch.

The Long & Allstatter Company of Hamilton, Ohio, are building a machine for punching at one stroke all the holes in splice bars or fish plates, or any similar work in multiple punching. The tools shown attached are for punching six elliptic holes in splice bars 1 inch thick and can be adjusted for different distances between centers of holes. The machine is under perfect control by hand lever, and the tools are easily

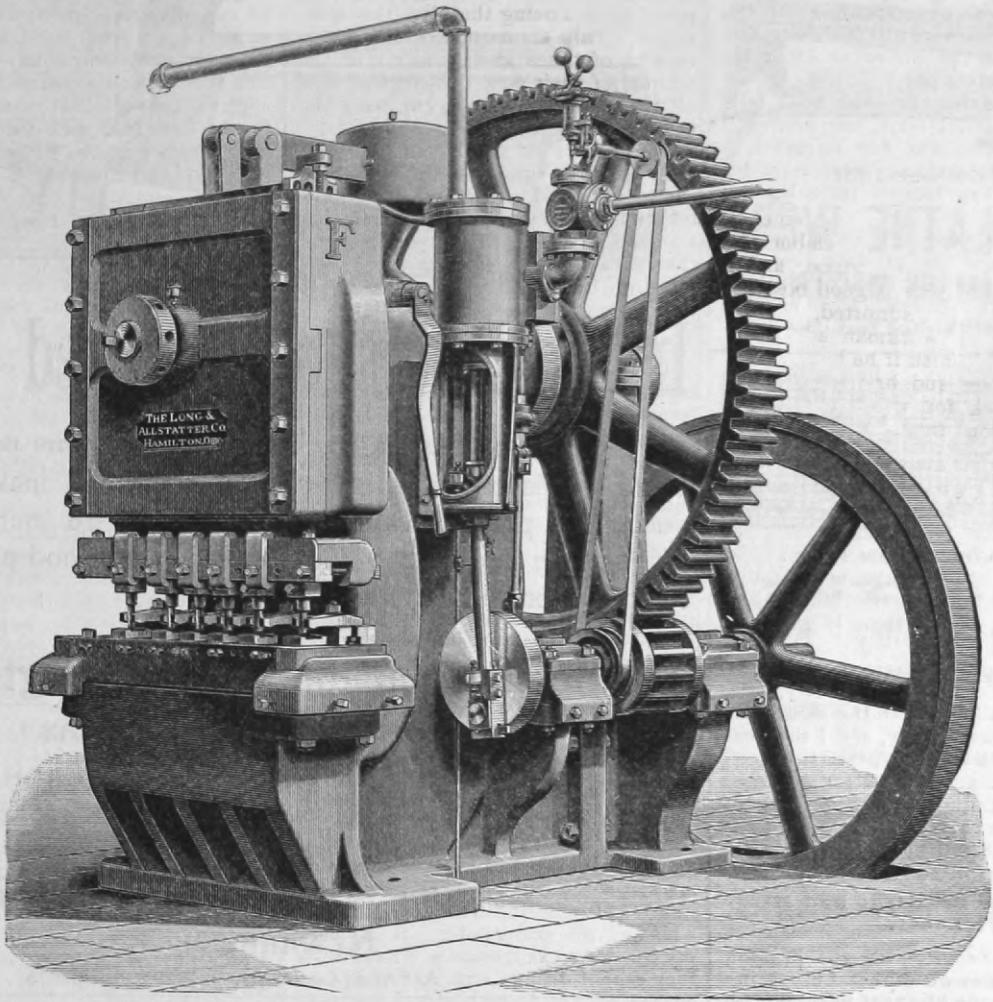
value of the property wiped out during that period was \$1,040,400, a larger showing than ever before recorded.

Defect in Boiler Construction.

The *Locomotive* describes a defect in boiler construction which is indirectly the cause of much trouble. In rolling plates into cylindrical form, preparatory to riveting them up into shells, it is customary to bend one end of the plate to what is judged to be the proper radius

place, and after the shell has been brought to conform with the "sweep," or templet, in every part, it is ready for riveting.

Now, it will be seen that the treatment required for bringing the laps together in this manner is rather violent; and it follows that nothing but the best of materials will stand it without being greatly distressed and permanently weakened. Under the sledging operation the material is likely to be strained beyond its elastic limit, unless it possesses great ductility. The greatest



STEAM DRIVEN SPLICE BAR PUNCH.

and quickly attached and adjusted. An automatic stop brings the slide or ram to rest at any point of the stroke desired. The machine is driven by heavy steel cam shafts, provided with a hand wheel in front for setting the tools by hand. The slide is counterbalanced. The attached steam engine with governor makes the machine self contained and independent of belting and shafting. It is also provided with tight and loose pulleys for driving by belt when desired.

The loss of life and property on the great lakes this year has been almost unprecedented. During the first ten months 53 boats, aggregating 24,258 tons, and 123 lives were lost. The

by the use of the sledge-hammer. The plate is then run through the rolls and rolled into shape, the end that was previously bent being introduced first. When the plate has been rolled all but the last 5 or 6 inches, the last end slips off of the first roll, and the rolls can no longer "grip" the sheet. The result is that the last end of the sheet is not bent to the proper radius, but remains straight or nearly so. The shell (if rolled from one sheet) has one end of it "standing off" from the rest of the shell. In order to bring the outer lap to the proper curvature, it is customary for one man to hold a sledge against the projecting edge of the lap, while another workman strikes the shell on the inside. In this way the lap is bent down into

strain on it comes on the outer lap, at or near the line where it touches the inner one.

If the sledging were done while the sheet is hot, it would not be so objectionable; but the great majority of boiler makers will not attempt to heat the plate before sledging the lap down, because when the sheets are hot they are apt to buckle out of shape and give great trouble. We understand that in England it is compulsory to cut off the flattened ends of the plate in order to avoid this difficulty.

It is estimated that there are 25,000 men in Detroit without employment, and their present chances of obtaining any are thought to be very slim.

Management of Men and Manufacturing Industries.

FOURTH PAPER.

A Good Boss.

BY THOMAS D. WEST.

He is "a good boss" is a term often heard expressed by employees and employers, and any one unacquainted with industrial parlance and significance often attached to expressions would be at a total loss to understand why a man called a good boss by the former should not always be considered the same by the latter.

It must be admitted there is a cause not obvious to many for the varying conception of such qualifications.

"A good boss," to be such in the strictest literal understanding of the term, is a man who will faithfully and justly perform the duties or labor for which he receives pay.

I am aware that the good book tells us "a man cannot serve two masters," but that version was not intended to refer to employers and employees, for they are not two masters for a boss to serve.

There is only one, and he is the man who purchases the product that the combined duties and labor of the boss and workmen produce, and in this light only can "a good boss" be justly considered or admitted.

Will one workman admit another to be a good man if he has not the physical power and brains to ably perform the work for which he receives compensation from his employer? Certainly not. Then why should a boss be called good who does not ably perform the work for which he receives compensation from his employer?

It takes but little thought upon this point to see there is something higher in "a good boss" than is generally conceived of.

I well know the term as applied by some means a boss that is easy, careless and indifferent to the duties for which he receives pay, and I shall endeavor to show in this paper that such men are not good bosses for workmen to even encourage, and if they are not good men for their employers as well, then they should not be permitted to occupy offices of trust and confidence.

Necessity for Proficient and Minor Labor.

In seriously considering the question of manufacture, we cannot but be impressed with the idea that in producing the product of a firm every person from the most minor to the most proficient in their employ has some influence in perfecting the quantity and perfection of the output.

This admitted, we can but in a sense consider the efforts of all essential to effecting the ends sought for, and that the services of the minor, as well as the proficient, must be employed.

Acknowledging we must have the minor and that his labors are necessary to the completion of the product, where can we justly draw the line for the master to commence and the man to leave off?

Man and Master.

Surely not at the boss, for he can only be justly numbered with the proficients and may often be placed as the first of them. His duties may be in having control and directing, but could the effort or labor of those under him be

dispensed with any more than his own in producing the firm's finished product? Of course not. Rightly considered, the boss is but the proficient whose duty it is to advise, instruct and push forward the work to the end that the product can be made profitable and sufficiently perfect to be acceptable to the buyer, and who is, when we look squarely at the problem, the true master, for it is the customer that all efforts of any manufacturing enterprise must labor to please.

Blunders and Poor Workmanship.

If work is condemned or found fault with by the purchaser, every one engaged in its manufacture can generally expect to get a dressing or reprimand, the lash being first applied to the highest proficient (the manager), who in turn gives it to the superintendent, he then to the foreman, the latter to the next most responsible. They in turn send it down the line to the most minor. They all get it, the only difference being that the first lashes of the whip are most severe and cutting, and oftentimes go so deep as to cut many out of their positions.

We must now admit, and I think truly so, that employer and employee are not man and master and the efforts of the first two are so in common that no such line should be drawn, and that each is only laboring to the interest of the other in trying to please the buyer.

Mutual Interest and Responsibility.

The main difference, if any, between employer and employee is that the former is now held financially responsible for damages in every form and if the master says he will not accept work, the latter is fairly sure he will at least get his pay, though the lack of same coming to the former may result in ruining him.

The interests of the employer and employee are mutual. They should not be separated, and to clearly illustrate the justice of such an alliance we will suppose all the industries of this country to be under one management and the product only salable to one foreign nation, and not until it would accept the goods would money be forthcoming to pay the employer and expense of manufacture. Such a condition would surely cause employees to think there was something more than figuring "to get in time" necessary to insure them their wages, and seriously impress all with the true conception of who was the real master. Some may say this is an exaggeration. Even so—they cannot dispute but that the present methods of doing business embrace the same principle, the only difference being there are now thousands of managers to oversee production and thousands of masters to purchase the product, and this large division of control and territory gives more of a leeway to dispose of unprofitable and imperfect manufactured products and the employee an opportunity of being disengaged of just duties to his employer who hires him to aid in producing profitable goods that will please the buyer.

If the employee found that by careless and poor management on the part of a boss he were to suffer in not receiving his pay his conception and desire for qualification would be very rigid and much changed from that now generally found.

"A Snap."

A good boss in looking out for the interest of his employer is also looking

out for that of the employee, and his goodness cannot be defined by permitting those under him to have "a snap."

He is paid for fulfilling a trust placed in him, and there are many ways in which he can exhibit goodness that will be a hundred times more beneficial to those under his charge than by permitting "snaps" or favors to a few, for as a general thing where such are found existing some are made to suffer for it.

A True Boss.

"A good boss" will not show partiality, but ever stands independent and in a position to say no or yes, or discharge any person upon the "spur of the moment" for a just reason.

He will have higher principles than tolerating clannishness, "snaps" or favors, but will endeavor to do justice to all. There are many ways in which he can dispense goodness and command respect and confidence, though apparently "ruling with an iron hand," and the writer's experience as a journeyman proved that men who were rigid, exacting, and distant with all their men were men of principle, kind to a fault and reasonable in their dealings.

Kindness to Employees.

There are always opportunities arising to give a boss chances to exhibit kindness and consideration for the welfare of those under his charge other than by permitting "snaps" and being indifferent to his duty. If a man gets injured let him see you have feeling and desire to do all in your power to relieve his sufferings. Have his home visited, and if his family require necessities of life use all your influence to see they are provided for. If slackness compels you to lay him off with no immediate prospects for resuming work, advise and do all you can to get work elsewhere for him. In short, if you learn of his being in any trouble do what you can to help him out. Make friends of your men and get them so attached to your works that they would not wish to leave them.

These are the characteristic points, combined with using effort to seeing that work is turned out profitably and perfect, that go to making a man a "good boss" and for one I would much prefer working for a man of principle, though he might be most exacting in obtaining a big day's work than some, of the insipid, let things take care of themselves bosses that are to be found.

I well know there are bosses who are drivers and have no principle, but the march of progress is making them less every day and time will take care of them.

What is more required is to understand one another and conceive who are the real "men and masters" and what should to both sides justly constitute "a good boss," and when such elements come to be rightly recognized, then, and not till then, will we be on the right road to solve the problem of capital and labor.

Two representatives of the Chinese Government are now in the United States studying the naval and military methods of this country.

The Standard Oil Company are about to begin a vast oil and gas operation in Northern Pennsylvania, where they have leased all the territory where surface indications of oil or gas exist.

The Lake Carrying Trade.

The following very interesting review of the results of the past season in the carrying trade on the great lakes is taken from the *Chicago Times*:

The crops of the West, the iron ore from Lake Superior region, the coal from Pennsylvania and Ohio, and the lumber from the mills were all carried by lake during the season of navigation just closed at rates which, for cheapness, have no precedent for any extended period in the history of navigation. The averages for the season are the cost prices of transportation on the lakes, and that they should be so low shows the wonderful advancement made in recent years in carrying freight by water. It is said that nowhere else have the many difficult problems of handling freight cheaply and expeditiously been met and solved with greater success than on the lakes. The season's figures go far to prove that claim.

If the balance sheets of all the boats engaged in general commerce on the

with it. There were too many boats. For five years the shipyards had been working to their full capacity producing large and swift carriers. Steamers were built last winter of such size that four of them had the carrying capacity of an ordinary railroad between Duluth or Chicago and Lake Erie. Many conservative vessel owners have stood aghast at the tremendous increase in the capacity of the lake marine, knowing full well that as soon as the iron industry ceased booming a period of disaster would come. It did come. While winter has put an end to the wild scramble for cargoes there is no likelihood that spring will bring better conditions. There will still be more boats than cargoes, and this means cost prices of transportation, regardless of agreements, combinations or trusts which may be attempted during the winter.

Even vesselmen who have passed through the disastrous season will be surprised at the averages of freight rates paid on the principal commodities of lake traffic for the 196 business days of the season. They are as follows: Corn,

cent., while operating expenses have decreased 20 per cent., has convinced the Traction Company that some more speedy and reliable motive power than horses is demanded by the public. As the desired system is intended for use over the entire city the cable would be inapplicable, while the overhead features of the trolley system would be so objectionable in the crowded streets of New York as to make that method undesirable. The company declare that they will exact no rights in the invention in return for the \$50,000, although they do not promise to defray the expenses of experiments. This encouraging opportunity for the exercise of the large stores of inventive genius existing in this country will assuredly not be lost.

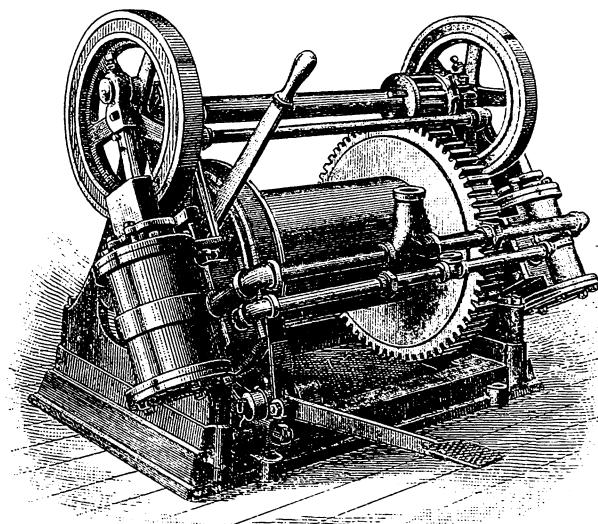
The Bacon Special Hoisting Engine.

At the Huanchaca mine in South America are 36 of the hoisting engines here illustrated, which were designed by Copeland & Bacon of New York, especially for light hoisting, in mines for underground use, as in winze sinking, &c. The engines are made in two different sizes, with double 5 inch cylinders and friction drum 12 x 21 inches, and brake, the space occupied being 3½ x 2 feet, and with double 6 inch cylinders and friction drum 14 x 24 inches, and brake, the space occupied being 3 x 4½ feet. They can be run by steam or compressed air (generally the latter is used) and when lowering the drum runs loose on the shaft independent of gearing and is controlled by a wood lined brake. Each engine is provided with a quick acting throttle valve and lubricator and is thoroughly tested before leaving the works. The flanges are deep, permitting the drum to be lagged with wood if thought desirable to increase its diameter.

Water Tube Boilers.

The following remarks, which were taken from the *London Engineer*, will be read with interest in connection with the paper by Engineer-in-Chief Geo. W. Melville, read at the recent meeting of the Society of Naval Architects and Marine Engineers and published in part in *The Iron Age* of December 7, 1893:

The notable success which has been attained with their respective water tube boilers by Yarrow & Co. and Thornycroft & Co. cannot fail to stimulate the use of water tube boilers in the navy and the mercantile marine. It is stated that the two new British battleships "Magnificent" and "Majestic" are to be fitted with French boilers. Steam generators of that type have been used, it is stated, with satisfactory results, for some time in the French Navy. But we cannot think that the Belleville system is superior to that of the English firms we have just named. The French boiler is composed of comparatively large tubes, while those of Messrs. Thornycroft and Messrs. Yarrow have small tubes. The latter weigh less, power for power, and appear to be able to stand forcing better. It is worth notice that marine boilers of the water tube type have been repeatedly tried in this country with unsatisfactory results. In all cases these generators had large tubes. A few with small tubes were, however, tried, and broke down utterly. We may ask why success should now be attained. To supply the answer we must



THE BACON SPECIAL HOISTING ENGINE.

great lakes could be merged into one whole it is likely that the difference between the profit and loss accounts would be infinitesimal. The larger boats of modern equipment have made from 3 to 5 per cent. on the investment where they have been lucky in catching up turns in freights and have escaped loss from disaster. The smaller boats in the general trade have had hard work to come out even, while the sail vessels in the lumber trade are worse off in every way than they were when navigation opened last spring.

The outlook when navigation opened was considered bright. There were great stocks of grain at up-lake ports, the World's Fair passenger business would monopolize the capacity of the railroads to such an extent that they could not handle coal, and the iron business was in fairly good condition.

The Straits of Mackinac had scarcely opened before the outlook for a prosperous season began to vanish. Long before the July panic came lake business was in a bad way. While the financial stringency in greatly restricting the shipments of iron ore was responsible for the disastrous period during July, August and early September, still it is likely that the excess of carrying capacity on the lakes had more to do

Chicago to Buffalo, per bushel, 1.432 cents; wheat, Duluth to Buffalo, per bushel, 2.339 cents; iron ore, Duluth to Lake Erie, per ton, 77.297 cents; iron ore, Escanaba to Lake Erie, per ton, 56.164; coal, Buffalo to Chicago, per ton, 45.944; coal, Buffalo to Duluth, per ton, 29.163.

An Opportunity for Inventors

The Metropolitan Traction Company of New York have, it is announced, decided to appropriate a sum of \$50,000 as a prize to any person who shall, before March, 1894, submit an actual working system of motive power for street railway cars which shall be as efficient in speed and economy as the cable or trolley, but without the use of poles and overhead wires. The Railroad Commissioners have promised co-operation in the matter, and it is expected that the company's liberal offer will stimulate some inventive genius to devise a method of street transportation more suitable to a crowded metropolis than those now in use. The experience of the new cable cars on Broadway since their inauguration a short time ago, where traffic has increased 25 per

look to the whole course and policy of marine engineering during the last 10 or 15 years. In the first place, there has been a great augmentation of pressure. Now, the greater the pressure the better chance has the small tube boiler, because the volume of the steam is reduced. Thus, roughly speaking, a bubble representing a given weight of steam will, if of 200 pounds pressure, occupy about one-fourth of the space it would fill if its pressure were 50 pounds. Again, feed water is purified now in a way undreamt of a few years ago. Grease in a water tube boiler means destruction, and it causes disastrous priming. But until comparatively the other day the feed water filter was unknown. Again, the Thornycroft boiler would be impossible unless mild steel tubes were available. Copper might perhaps be used; but we doubt that they would on the whole be so satisfactory as the very perfect soft steel tubes that can now be had. Furthermore, it is impossible to make a very light and powerful boiler unless the fires can be forced. But the whole art and mystery of forcing fires has only been understood within a comparatively recent period. Indeed, it is doubtful if it is quite understood yet.

Great as are the results which have already been attained, it remains to be seen whether they cannot be beaten. We believe that they can, and that it is possible to make even lighter and smaller boilers for the power than anything yet produced. The limit of rate of combustion has not yet been reached. Under existing circumstances it is said that about 80 pounds of coal is the maximum quantity that can be burned in an hour per square foot of grate. It is true that as much as 120 pounds have been charged; but then a very large proportion of this is simply blown up the chimney in the shape of big cinders. But it is clear that this could not occur unless the airways through which the products of combustion escape were wide enough to permit the cinders to pass. Let us suppose that instead of tubes $1\frac{1}{2}$ inches in diameter, the tubes were but $\frac{1}{2}$ inch in diameter, and it is evident that the passage of comparatively large pieces of unburned fuel would be stopped. It is true that $\frac{1}{2}$ inch tubes cannot be employed, for one reason because flame is extinguished in them, although it is worth while to state that very surprising results may be obtained by their use with gas and with anthracite. But the Serve tube tends to answer the same end, and it is not at all impossible that much of the great saving effected by the use of these tubes when the fires are forced is due to the arrest of unburned fuel, which, with the clear tube of the same diameter, would be ejected up the chimney. It is evident, however, that when small water tubes are adopted, as in the Thornycroft and Yarrow boilers, the tubes may be set so close that nothing but very small cinders can pass between them. Unless, however, the tubes are prepared to take up the heat, they will be quickly destroyed by the tremendous temperature that must exist in a furnace driven with, say, 6 inches or so of air pressure, and this leads to the consideration of another branch of the subject.

In the water tubes of a hard driven boiler there is, perforce, not solid water, but a mixture of steam and water. The most erroneous views are unfortunately entertained about the cause of circulation; and more nonsense has, perhaps, been written about the matter than about any other technical subject that

we could name. It would serve no good purpose, however, to deal with this branch of the subject now. It is enough for our purpose to say that in order that heating surface may be as efficient as possible, it is essential that it should be continually traversed by solid water in motion, not a mixture of steam and water. To secure this end is a comparatively simple thing. Let us, to avoid complication of ideas, suppose that all the heating surface is disposed in the shape of a long coil of tubing. Let the upper end of the coil open into a vertical cylinder of moderate diameter, not exposed to the heat of the fire. The working pressure will be 50 pounds less than that maintained in the coil. The upper end of the coil will be fitted with a loaded valve inside the vertical chamber or steam separator. Between the bottom end of this chamber and that of the coil is a force pump, which will continuously draw water from the separator and force it into the tube. Then its temperature will be raised, but it will practically be prevented from boiling until it has passed the reducing valve, when that proportion of it due to the temperature will, under the reduced pressure, flash into steam, the remainder falling as water, to be pumped again through the coil. There is nothing far-fetched in this idea. It has, up to a certain point, been carried out with great success by Herreshoff in America, and some years ago in this country by Mr. Yarrow. But neither attempted to keep solid water in the coil, because it is evident that the circulating pump drawing from a separator with 50 pounds less pressure per inch in it than that in the boiler would require a good deal of power to work it. But it is easy to exaggerate the loss to be incurred in this way, while the gain is certain. We do not suggest this arrangement, unless it is combined with an enormously high rate of combustion; then we have no doubt a steam generator of greater power for the weight than anything yet turned out could be produced; and it is not improbable, we think, that it is in this direction we shall have to look for the next advance. Admirable as are the results which have been attained, we do not suppose that any one, least of all Messrs. Thornycroft or Yarrow, regards them as representing finality.

Manufacturing Machine Tools.

Last summer one of our principal machine tool makers indulged in a protest against special machines that disturbed his manufacture, and this brings to mind the fact that such business has become, in this country more than anywhere else, a manufacture, also raises the question if this is not a misfortune. The result is cheapness, and no more. It dispenses with skill, and whenever some special kind of machinery is wanted, as in the case of the water wheels at Niagara, we go abroad for it. There is continual importation of special machine tools going on.

We have a good many such here in San Francisco, and when special machines are wanted, the prices quoted in these manufactories are so high as to send the order abroad. We have seen quotations of prices as two to one for certain machine tools, and even a greater difference.

There are factories of machine tools abroad, in England and Germany, for example, where merchant work is made for export, but machine shops there are not supplied with such tools. Some of

the best makers in England, Messrs. Craven Brothers of Manchester, for an example, never had an engraving of their tools, and, as we believe, no trade circulars. They photograph machines when completed, and send prints to accompany tenders, but there is no regular manufacture of tools, or such uniformity as will permit engravings to be used.

The system in vogue in England, and, as we believe, in Europe generally, can be best illustrated by a typical case that occurred about 12 years ago.

The writer, who was supplying certain machine tools for wood and iron, made in this country, was requested to call on a prominent locomotive superintendent to receive instructions for a tender. "I want," said he, "a machine to bore holes in wood, and I observe that when there are to be holes of several sizes in one piece the augers must be changed and the work rehandled. I want a spindle for each auger, so that all the holes can be bored at one handling."

To have presented this officer with a trade catalogue of wood boring machines then in use would have availed nothing, except, perhaps, a courteous dismissal.

We saw at once the advantage of what he proposed, and knew also that no such machines were made at the time. Careful drawings were made for a multiple spindle machine and sent in with a specification. The result was a second invitation to call on the officer, when his remarks were in substance as follows: "Your proposed machine seems well arranged, as far as it goes, but its functions are confined to revolving the augers and moving them up and down. One man, or even a boy, can attend to this, but it requires a number of men to handle and present the timber so the augers can be set in position. Now is it not easier to move the augers laterally across the timber, and can you not assist by power the movement of the timber endwise?"

We had been designing one kind or another of wood boring machines for 20 years, and stood there before this officer, conscious of not knowing even the rudiments of what he wanted and required, but saw at once that he was correct, and a new machine was designed, with four spindles, all to traverse across the timber, and a self acting "roller bed" that would move the timber endwise.

The drawing was sent in with a specification, and in a short time came back the official order for the machine. It was constructed by Messrs. Bement & Son, now Bement & Miles, of Philadelphia, and cost about \$800. This was the father, so to speak, of a numerous tribe that followed. Most of the leading makers in this country now make machines of the kind, which were, as above related, originally designed by Mr. Adams of the London & Southwestern Railway, who furnished all the "ideas" of the modern multiple spindle wood boring machine, now common in all countries.

We could illustrate the advantages of special practice by a number of instances of the same kind, where important improvements came about by a disregard of standard machines and machine-manufacture. It may cheapen machines, but does not improve them, in fact becomes a barrier to improvement, so there are at least two sides to the argument. It may be more comfortable and profitable to manufacture machine tools if people can be found to buy them, but it is not a very advanced

method, or practicable with the highest class of customers who buy them.

One firm we know of engrave their machines in true elevation, to a scale of $\frac{1}{4}$, and have done so for 25 years past. This is a kind of compromise between the common trade circular plan and drawings, and has done very well, but calls for high skill in engraving to prevent a "flat" appearance. It is the old art of shading, with India ink, now quite forgotten, and replaced by photography.—*Industry.*

Basic Bessemer Costs.

F. Torduer read a paper before the Association des Ingénieurs sortis de l'école de Liège in October, 1891, entitled "Note on the Manufacture of Steel," by the Thomas Gilchrist process, in which, besides giving many interesting details of practice, he discussed very freely the costs of manufacture. Portions of this paper, with comments thereon, have appeared from time to time in the trade journals of this country.

Since there is at present no basic Bessemer steel being made in the United States it is possible that this article of Mr. Torduer's in its entirety might not prove of very much interest, but in the light of the present tariff agitation and of the fact that we may be compelled to more nearly meet the cost figures that he shows, the following notes may be of value.

While these, of course, bear directly on basic work and, perforce, contain some remarks on that particular practice, still the result in so far as labor is concerned is just as applicable to acid practice, be it open hearth or Bessemer.

In making any comparison between the work, figures and costs given by F. Torduer and the possible results on similar work in this country, the first thought is, Are his figures correct? It naturally follows, if they are correct, that due attention must be given to the difference in the rates paid for labor in Belgium and in the United States, the consequent difference in the cost of the raw materials and the variations in practice that would arise in transplanting the process to this side of the water. No sharp line of demarcation will be drawn between these divisions and they will undoubtedly overlap one another in this article. Taking them up in their order, however, as nearly as possible, the question as to the accuracy of his figures first attracts attention. I refer here solely to the rates for labor, the number of men employed, the amounts of the various supplies needed, the cost price of the same and the consequent cost of his finished material.

Mr. Torduer's costs are based on an annual production of 90,000 tons of ingots—that is, 150 tons each 12 hours. This is an extremely small output for such a plant as is here outlined. Three ten-ton vessels should turn out at least double this amount—say 300 tons each 12 hours, or one heat every 24 minutes, two vessels being in service all the time and one in repair. Such a rate of speed is perfectly attainable with "needle" or "plug" bottoms, the casting arrangements being so constructed as to permit of slow pouring. This increase of output would tend to still further reduce the final cost. Mr. Torduer has noted this point, but apparently thinks such a large output could not be sold. The natural question then arises, Why build such a large plant?

The first costs given are for unloading the stock or raw materials, and of these the first item is coal. It is possible that this is done by contract, and the price, one franc for ten metric tons, say two cents per gross ton, is rather high, especially when the low price of his labor is considered. Torduer figures on a consumption of 330 to 363 pounds of fuel per ton of ingots.

Comparing this with the best acid practice of about 200 pounds of steam fuel per ton of ingots (*vide Notes on the Bessemer Process*—H. M. Howe, Transactions Iron and Steel Institute, 1890), and remembering that the plant now under discussion is a very slow running one, the figure seems too low in quantity of fuel.

It is undoubtedly as true of the rest of his costs for unloading as it was of the coal—*i. e.*, that the figure he quotes is, if anything, high for that class of work in this country, and it is therefore safe to assume that if he is not accurate he is at any rate high enough to cover a reasonable margin for incidentals. As to the quantities unloaded the lime is somewhat less than is called for in his table of costs, but not enough to cast any doubt on the general accuracy of the figures. The direct process being used and consequently only a dolomite cupola being in operation we can readily see why he expends only $6\frac{1}{2}$ tons of coke.

Turning next to the list of wages furnished, the average rate per day of the men noted thereon is \$0.687. *The Iron Age*, February 16, 1893, says that Belgian steel workers averaged 68 cents per day during 1891. This may be considered as a further evidence of Mr. Torduer's correctness.

Under this first item that is now being considered there remain still two questions: 1. As to the number of men employed. 2. The quantities of materials used in converting 1 ton of iron into steel ingots.

1. Excluding the men unloading the stock or raw materials, but 88 hands per shift of 12 hours are employed on the wage list given by Mr. Torduer. While this figure might, perhaps, be reached in a plant that embodied all the labor saving devices known to the steel maker of this age, there is not, I think, a basic Bessemer works extant that can anywhere near approach such an economy of labor as here shown. Of course, very much depends on the manner in which the labor accounts are kept, but Mr. Torduer shows by the titles of the positions that he has endeavored to enumerate all the various posts, even if he has not always used enough men. Two firemen, one water tender and two ash wheelers—a total of five—using poor coal is a very small number for a plant of this size. Almost every item in his labor list can be criticised in the same way. Note that only one locomotive engineer is mentioned. Are we to presume, then, that this one locomotive brings all the fluid iron from the blast furnaces, moves the ingots from the casting pit to the rolling mills and handles the bottoms between the vessels and the drying ovens? Or does the plant contain other and more economical means to encompass these and many other little odds and ends that are not mentioned, but which constantly occur in practice? One lime charger is expected to handle over 4000 pounds of lime every 42 minutes—that is to say, he must load it from the place where it has been dumped by the unloaders of the stock, move it to and charge it into the converter. I doubt very much if one man is capable of such afeat.

No laborers, as we use the word, are mentioned on this schedule, and there do not seem to be any men on the list who could be used for lining the vessels. This is an important and expensive detail in a basic Bessemer plant, where the longest vessel lining life seldom exceeds 200 heats, the average being about 150, and it must not be overlooked in an estimate of cost. As Mr. Torduer does not furnish a sketch of the plant that he bases his work figures on, it is difficult perhaps to accurately criticise the number of men he considers necessary for an output of 150 tons of ingots per 12 hours.

2. Turning next to the table headed "Cost of Conversion," it is found that this apparently is intended to contain all items of expense and also to show the amounts used of some of the articles.

The loss of iron per ton of ingots is certainly high—16 to 20 per cent. The quantity of coal used has already been criticised. Mr. Torduer mentions in this table both dolomite and lime. There is unfortunately a certain haziness about the nomenclature adopted in the various works for the basic materials used. Strictly speaking, the term dolomite should be applied only to a mineral of the following composition: $\text{CaCO}_3 = 54.4$ per cent., $\text{MgCO}_3 = 45.6$ per cent., and calcite to a pure calcium carbonate. Since these do not occur in any large deposits in this absolutely pure condition, the names are naturally applied to stones which nearly approach the composition cited. In basic steel works, however, the word dolomite has been applied to the raw stone, whether it be magnesian or calcareous, and has again been used for the same stone after it has been "dead burnt" and prepared for its admixture with tar for use as a vessel lining. In the few cases where calcined dolomite was used as a basic addition to the charge of molten iron it was called lime, as was also the calcined calcite which later was found to be the proper material to use for this purpose.

From my reading of the text I understand that Mr. Torduer burns his material for basic refractories, called dolomite, on the spot, and charges the coke and labor into the general cost sheet, and that he buys his material for basic additions, called lime, in a calcined state. It seems probable that he has followed the practice adopted by plants conveniently situated to deposits of both dolomite and calcite, and proposes using the dolomite when "dead burnt" for the vessel linings, and the calcite, when calcined—*i. e.*, lime—for the basic additions. The amounts used are very similar to the figures given by other works and will be again noticed.

The cost price of the raw dolomite is given as \$1 per ton, and of the lime (calcined) \$1.60 per ton. The initial costs of these two stones when quarried are undoubtedly very nearly equal, since both must be as pure as possible in their respective ways. They are also much cheaper than in this country, but if the figures given are correct, and these are the only figures of Mr. Torduer's that I have any serious quarrel with, then the cost for burning lime, including the loss by calcination, seems absurdly low.

These two costs are the only ones that seem absolutely incongruous, and since there is no good reason for doubting that the dolomite could be laid down at the works for the figure given the onus of the error rests on the lime, except there be a very great difference in the distance of these materials from the plant, causing a marked difference in the freight rate.

For example, suppose the raw stone in both cases costs 35 cents per ton at the quarry, then:

	Dolomite.	Lime.
Cost of stone	\$0.35	\$0.35
Loss by calcination	.28	
Cost of stone per ton of lime	.33	
Fuel, labor, repairs	.70	
Freight rate	.65	.17
Cost at Charleroi	\$1.10	\$1.60

It is only in this way that I can conceive of the figures being correct, and it may be that the local conditions are such as to produce this result.

There are other apparent errors, or false assumptions made as to the number of men required to run the plant and in the quantities of the various materials required per ton of steel, but none of these are of sufficient importance to materially alter the result, and, as previously remarked, without a more complete knowledge of the plant it is impossible to correctly criticise or revise the statements on these points.

Taking the figures given as correct the cost sheets herewith will show the main differences between the Charleroi figures (see Sheet I), the figures for a plant running single turn, using cupola melted metal and making a slightly larger output (see Sheet II), and for a plant running double turn on direct metal (see Sheet III), the latter two cases being estimated for Eastern Pennsylvania.

Sheet I.—Charleroi, Direct Process, Double Turn; F. Torduer; 150 Tons of Ingots Each 12 Hours.

Items.	Cost price.	Weight per ton of ingots.	Cost per ton of ingots.
Iron (16 to 20 per cent. loss)	\$10.51	220 to 440 lb.	\$2.10
Coal	1.70	330 to 363 lb.	.28
Coke	3.20	88 to 99 lb.	.144
Dolomite (probably raw stone)	1.00	121 to 182 lb.	.06
Lime (18 to 19 per cent.)	1.60	396 to 418 lb.	.324
Tar, per 100 kg.	1.40	1 gallon.	.084
Fire brick, sand, &c.			.17
Molds and stools			.19
Black lead stoppers			.07
Sundries			.28
Railroad expenses, shifting			.02
Labor			.418
General expenses			.100
Sinking fund			.100
Ferromanganese			.300
Total	\$4.644		
Less value of slag	.60		
Add cost of iron	\$4.04		
Total cost of ingots	\$14.55		

Charleroi.—F. Torduer.—Unloading Stock; Labor Each 24 Hours.

	Francs.	Dollars.
Coal:		
45,000 kg. (99,000 pounds), at 1 franc (.20 cents) each 10 tons	4.50	.90
Lime:		
54,000 kg. (118,800 pounds) at francs 1.60 (.32 cents) each 10 tons	8.64	1.73
Dolomite:		
16,500 kg. (36,300 pounds), at francs 1.25 (.25 cents) each 10 tons	2.06	.41
Coke:		
13,000 kg. (28,000 pounds), at francs 1.50 (.30 cents) each 10 tons	1.95	.39
Sundries		
Totals	22.15	4.43
Charge one-half of this to each 12-hour turn	11.08	2.22

Charleroi Wage List.—F. Torduer.

Position.	Number.	Rate per man.		Cost per 150 tons.	
		Francs.	Dollars.	Francs.	Dollars.
Firemen	2	3.50	.70	7.00	1.40
Water tenders	1	3.50	.70	3.50	.70
Ash wheelers	2	3.25	.65	6.50	1.30
Spiegel cupola melter and charger	1	4.50	.90	4.50	.90
Helper	1	3.00	.60	3.00	.60
Engineer iron ladle	1	4.00	.80	4.00	.80
Weighmaster	1	3.50	.70	3.50	.70
1 Vesselman	1	4.50	.90	4.50	.90
2 Vesselman	1	3.80	.76	3.80	.76
Troughmen	2	3.50	.70	7.00	1.40
Ladlemen 1.	1	5.00	1.00	5.00	1.00
Ladlemen 2.	1	4.25	.85	4.25	.85
Ladlemen 3.	1	4.00	.80	4.00	.80
Pitmen 1.	1	5.50	1.10	5.50	1.10
Pitmen 2.	1	4.75	.95	4.75	.95
Pitmen 3.	1	4.25	.85	4.25	.85
Pitmen 4.	1	4.00	.80	4.00	.80
Pitmen 5.	1	4.00	.80	4.00	.80
Ingot handlers	4	4.00	.80	16.00	3.20
Weigher and marker	1	2.25	.55	4.25	.85
Hyd. valve men	1	4.50	.90	4.50	.90
Hyd. valve boys	2	2.00	.40	4.00	.80
Blowing engineer	1	4.50	.90	4.50	.90
Helper boy	1	2.25	.45	2.25	.45
Helper boy	1	2.00	.40	2.00	.40
Engineer, pressure	1	3.50	.70	3.50	.70
Engineer, blowers	1	3.00	.60	3.00	.60
Cinderman	1	3.50	.70	3.50	.70
Clean-up under vessels	4	3.80	.72	14.40	2.88
Crane oiler	1	3.00	.60	3.00	.60
Lime charger	1	4.00	.80	4.00	.80
Messengers for two foremen	1	1.75	.35	1.75	.35
Test smith	1	4.25	.85	4.25	.85
Helper	1	1.75	.35	1.75	.35
Tool smith	1	3.80	.76	3.80	.76
Striker	1	3.00	.60	3.00	.60
Refractories, foreman	1	6.00	1.20	6.00	1.20
Dolomite cupula	1	3.75	.75	3.75	.75
Dolomite cupula	2	3.25	.65	3.25	.65
Dolomite cupola	3	3.00	.60	6.00	1.20
Engineer dolomite grinding mill	1	3.00	.60	3.00	.60
Helpers	3	3.00	.60	9.00	1.80
Bottoman	1	14.50	.90	4.50	.90
Bottoman	2	14.00	.80	4.00	.80
Bottoman	3	13.00	.60	9.00	1.80
Heater (fireman)	1	2.00	.40	2.00	.40
Dolomite brickmaker	1	4.00	.80	4.00	.80
Dolomite brickmaker	2	3.50	.70	3.50	.70
Dolomite brickmaker	3	3.00	.60	3.00	.60
Dolomite brickmaker	4	3.00	.60	3.00	.60
Stopper maker	1	4.00	.80	4.00	.80
Boss mason	1	6.00	1.20	6.00	1.20
Mason	1	4.50	.90	4.50	.90
Mason	1	4.25	.85	4.25	.85
Mason	2	4.00	.80	4.00	.80
Helpers	3	3.00	.60	6.00	1.20
Helpers	4	2.75	.55	11.00	2.20
Foreman repair gang	1	4.00	.80	4.00	.80
Helpers	4	3.25	.65	13.0	2.60
Total				58.20	
For one turn, 150 tons				2.30	
Total of wages and engineers	17.00	1.40	7.00	1.40	
Assistant engineers	4.40	.80	16.00	3.20	
Total				4.60	
For stock unloading				2.22	
Add Sunday labor				.255	
Total				62.975	

Hence labor per ton equals 42 cents.

It is assumed on the two estimated cost sheets shown herewith that 83 per cent. of ingots will be produced, 8 per cent. of steel scrap will be made and that an absolute loss of 14 per cent. will be shown.

Since the metal will be charged into the converter colder when brought direct from the blast furnace than when remelted in the cupola, the losses are considered to be equal. That is to say that the increased loss from vessel eruptions in the direct process will equal the loss in the cupola melting of the indirect process.

It is much more essential to the obtaining of a lower loss in the basic than

in the acid Bessemer process that the initial heat of the metal should be high. The basic metal, low in silicon, is charged into the vessel and immediately comes into contact with from 12 to 16 per cent. of relatively cold lime. This, of course, chills and thickens the metal and tends to produce much "throwing-out" during the first stages of the blow. The higher the initial temperature the less the loss will be at this time.

While the absolute loss may thus be the same on both sheets II and III the

Sheet II.—Estimate for American Plant, Indirect Process, Single Turn; 180 Tons of Ingots, Each 12 Hours.

Items.	Cost price.	Weight per ton of ingots.	Cost per ton of ingots.
Pig iron (14 per cent. loss; 3 per cent. scrap)	\$12.00		\$1,809
Coal	2.20	500 lb.	.550
Wood			.01
Coke	3.50	250 lb.	.437
Dolomite ("dead burnt")	10.00	90 lb.	.450
Calcite	1.10		.017
Lime	4.00	820 lb.	.569
Tar	12c. per gal.	2 gals.	.240
Fire brick			.048
Fire stone			.032
Fire clay			.033
Kaolin			.008
Gannister			.024
Cupola blocks			.002
Cupola tuyeres			.001
Molds and stools			.200
Sleeves			.125
Nozzles			.005
Stoppers			.009
Shifting			.003
Insurance and taxes			.010
Stationery			.006
Incidentals			.002
Laboratory			.079
Oils, waste, &c.			.080
Car account			.007
Repairs, labor			.220
Repairs, material			.070
Repairs, shop account			.033
Labor			1,600
Ferromanganese	58.50		.704
Spilgeleisen	23.00		.540
Total			\$7.818
Less value of slag			1,500
Add cost of pig iron			\$6.318
Total cost of ingots			\$18.318

cost per ton of ingots might be higher on III than on II, as shown in the following calculations. It has, however, for simplicity been taken as the same, and this result could be reached in practice if a cupola for melting cheap iron scrap and rough steel scrap was run and this metal mixed with the direct iron from the furnaces. The "metal mix" for the cupolas of Sheet II is as follows:

Per cent.	Cost per ton.
8.75 pig iron	\$12.00
2.5 rough steel scrap	10.50
10.00 burnt or cast iron scrap	.28
10.00	1.00
Total	\$11.76

Since 83 per cent. of ingots are produced the cost of this "metal mix" per ton of ingots is \$14.17, less credit for 3 per cent. of steel scrap at \$10 per ton, \$0.361, equaling \$13.809.

The direct metal, on the other hand, costs \$14.457, less credit for 3 per cent. steel scrap at \$10 per ton, \$0.361, equaling \$14.096.

Since the pig iron costs \$12 per ton the cost of the loss is \$1 809. It will be noticed, however, that Mr. Torduer does not calculate his loss in this way, but simply says that 20 per cent. on an iron casting, \$10.51, equals \$2.10. It happens that 17 per cent. loss on \$12 iron nearly equals the same

Sheet III.—Estimate for American Plant. Direct Process, Double Turn; 300 Tons of Ingots Each 12 Hours.

Items.	Cost price.	Weight per ton of ingots.	Cost per ton of ingots.
Iron (14 per cent. loss; 3 per cent. scrap)	\$12.00	400 lb.	\$1.809
Coal	2.20		.440
Wood			.005
Coke (for heating ladies, &c.)	3.50		.010
Dolomite ("dead burnt")	10.00	90 lb.	.450
Calcite	4.00	320 lb.	.549
Tar	12c. per gal.	2 gals	.240
Fire brick			.030
Fire stone			.016
Fire clay			.001
Kaolin			.010
Gannister			.005
Cupola blocks			.005
Cupola tuyeres			.005
Molds and stools			.200
Sleeves			.025
Nozzles			.005
Stoppers			.018
Shifting			.002
Insurance and taxes			.007
Stationery			.005
Incidentals			.002
Laboratory			.045
Oils, waste, &c.			.025
Car account			.005
Salaries			.040
Repairs, labor			.180
Repairs, material			.050
Repairs, shop account			.020
Labor			1.00
Ferromanganese	58.50		.704
Spiegeleisen	23.00		.540
Total			\$6,944
Less value of slag			1,500
Add cost of pig iron			\$5 444
Total cost of ingots			\$17,444

figure, but his is not the correct method, and I shall, therefore, use the result obtained by the method shown here. Comparing cost sheets I, II and III, but more especially I and III, it will be noticed that Mr. Torduer apparently omits the following items:

Wood	0.005
Fire clay	.016
Kaolin	.001
Gannister	.010
Sleeves	.025
Nozzles	.005
Laboratory	.045
Oils, waste, &c.	.025
Insurance and taxes	.007
Stationery	.005
Incidentals	.02
Car account	.005
Repairs, labor	.18
Repairs, material	.05
Repairs, shop account	.02
Spiegeleisen	.54
Total	.941

He inserts the following three:

General expenses	.10
Sinking fund	.10
Sundries	.28

Total..... .48
for which no exact equivalents are to be found on either cost sheets II or III.

The three items of general expenses, sinking fund and sundries undoubtedly

cover many of the expenses that are enumerated more in detail on the sheets I present. The sum of these three items is \$0.48; subtracting that from the total that has just been found (\$0.941 - \$0.48 = \$0.461) there remains \$0.461 unaccounted for in his schedule.

Considering this in the light of the low wages and the low cost of raw materials that have been noted in this article, remembering also that no charge at all is made for spiegeleisen and that the use of only about one-half the amount of ferromanganese required for the quality of steel that it would be necessary to manufacture in this country is permitted, it looks very much as though the previous assumption that his figures are correct in the main, in spite of the apparent errors and discrepancies, still holds good.

Mr. Torduer does not say that his costs are based on the use of coke or anhydrite coal as a recarburizer, and in fact includes in his labor figures the men required to run a spiegel cupola; still, as he mentions the growing use of this practice, and omits to charge for any spiegeleisen, it must be assumed that he endorses it and calculates his costs in this manner.

If the amount charged for spiegeleisen in the American cost sheet be omitted, the total is \$0.401, and then Mr. Torduer's three items exceed by \$0.081. This difference is not great, and may tend to show that if any error exists it is on the high side.

No calculations on the cost of basic Bessemer steel should be undertaken unless the value of the slag be considered, though it is probably questionable if the full value for the slag produced could be obtained in this country at first. Any new article, however good it may be, requires some time for its introduction. This item of revenue cannot be omitted from any fair calculation of the cost of basic Bessemer metal, as it would eventually become a valuable by-product of the plant.

It is, I believe, a well known and openly stated fact, by the friends as well as by the enemies of this process, that the cost of conversion is greater than by the acid Bessemer. It is therefore only just that due credit should be given for any advantages that may be found in this method. The production of this valuable fertilizing agent, which has a world wide commercial value, and the difference in the cost of basic and acid pig irons are the two factors which should be counted on to overcome this extra expense for conversion, and perhaps possibly make it less than by the acid process.

It may also be well to note just here that no commercial estimate of the value of the basic Bessemer process for any particular locality should be formed without taking into consideration the grade of steel that is to be made. For the production of a "dead soft" steel this process possesses many advantages over the acid method.

As will be noticed on the accompanying cost sheet, the cost of conversion is for

Charleroi	\$4.64
Sheet II	7.818
Sheet III	6.955

A difference of \$3.178 in the one case and of \$2.315 in the other.

(To be concluded.)

The absence of large orders is being keenly felt among Ohio manufacturers of iron and steel and kindred products, consequently, it is to be expected that

many will take more than the required time for stock taking in January. With bariron at 1.35 cents, halfextras, Chicago delivery, and sheets, both black and galvanized, down to the lowest prices yet recorded, there is not much to create enthusiasm. There was cause for gratification over the settlement of the wages scale, but it was immediately counteracted by a lack of business in sight and the publication of the tariff bill, which has caused a great deal of complaint from all quarters. In the manufacturing centers it has put a damper on everything. No matter what the duty is, Ohio manufacturers want it to be specific; if they have to fight they want to fight fair. Whether the tariff trouble is responsible for the present dullness or not, one thing is sure—that is, that several new enterprises which had been projected and were nearing organization have been temporarily abandoned, and may have received their death warrant.

The U. S. Cruiser "New York."

The official report of the Trial Board on the recent final trial of the armored cruiser "New York" was rendered to the Navy Department a few days ago. After enumerating some minor defects of no material consequence, the board submit their opinion of the new cruiser in the following terms of satisfaction:

1. That the guns, gun carriages and turrets, their fittings and appurtenances work properly and that the ship is well built and sufficiently strong to stand the shock caused by firing.
2. That the hull, engines, boilers and dependencies have not upon this trial exhibited any weakness, breaking down or deterioration. During the two hours' trial at sea under full boiler power at natural draft the highest steam press ure was 160 pounds. The average steam pressure was 140 pounds. Highest number of revolutions, 112. Average number of revolutions, 106. The first day out the wind was of force five from the southwest, with moderate but choppy sea. The second day the wind blew strong from northwest, abating the sea considerably. Under these conditions the ship was remarkably steady, especially in the trough of the sea on the first day. Her rolling motion was slight and easy, though a good number of the crew were made seasick.

The ready obedience of the ship to her helm drew forth the favorable comment of the pilot, as it had impressed the members of the Speed Trial Board in May last; and this board is of opinion that no question of unseaworthiness or of instability will ever arise with regard to the "New York;" that, when she has been given suitable opportunity for getting into proper shape as a well-organized, well-equipped and well-drilled man-of-war, she will have no superior afloat of her class.

The mean speed at full power, at natural draft, as shown by two Bliss patent logs, was 15.84 knots. This low speed was probably due to the poor quality of the coal used, to great draft of water, and to foul bottom.

The annual meeting of the American Institute of Mining Engineers will be held at the Princess Anne Hotel, Virginia Beach, near Norfolk, Va., beginning Tuesday, February 20. John Graham, Jr., of Norfolk, is chairman of the local committee.

The Depression in Shipping Interests Abroad

In a general way it is well known that there has been widespread depression in foreign shipping interests during the past two years, but definite and reliable figures bearing on the subject are not readily accessible. Special interest therefore attaches to data carefully collected with the assistance of well-informed specialists in England and on the Continent, and laid before the Institution of Engineers and Shipbuilders in Scotland by John Inglis, the recently elected president, in his inaugural address.

Taking up first the affairs of some of the great English shipowning companies, it appears that the last year's accounts of four of them show profits, actual or nominal. Thus the Peninsular and Oriental Steam Navigation Company, with a capital of \$11,298,000, declared a profit of \$680,800, as the result of the operations of the company during the last year, for which a report has been submitted to the stockholders. This well established line has a fleet of more than fifty steamers, maintaining service on an elaborate system of routes connecting London with the East, including the Australian colonies. The Peninsular and Oriental Company receive an annual mail subsidy from the British Government amounting to \$1,652,000 and an Admiralty subvention of \$60,460. Without the money received under these Government contracts there would have been a deficit. Another important line which had a balance to its credit was the Cunard Steamship Company, with a capital of \$7,792,000 but showing a profit of only \$33,700. Payments are made to this line under contracts for ocean mail service and for Admiralty subventions, the annual payment by the British Government on the former account being about \$245,000 and on the latter \$65,700. A third line which showed a profit, although by a very narrow margin, was the Royal Mail Steam Packet Company. On their capital of \$4,383,000 a profit of a trifle less than \$1500 was realized for the year. The amount received by the Royal Mail Company from the British Government for mail services is about \$440,000 per annum. A fourth company who can claim a profit on the business of the last year is the Shaw, Savill and Albion Company. With a capital of \$2,270,000, a profit of \$58,800 was shown. This line is engaged in the Australian trade and besides several large passenger steamers has a number of freight steamers and sailing ships.

Turning now to other lines, some of those which seem most firmly established have experienced serious losses in current business, a result not due to casualties in their fleets but to the depressed state of trade. The Union Steamship Company, with a capital of \$3,400,000, have lost in one year \$336,000. The Castle Steam Packet Company during the same period have lost \$195,000, their capital being \$2,450,000. Both these companies have fine fleets of steamers transporting passengers and cargo between England and South Africa. The amounts received by them from the British Government for mail service are small. Another line showing a debit balance is the Orient Steam Navigation Company, owning a number of well known steamers in service between England and the East. With a capital of \$2,270,000, the Orient Line showed a loss on the last year's business of \$209,000, in spite of the fact that the

receipts for carrying ocean mails amounted to about \$415,000. Still another important line for the business of which definite figures can be given is the Pacific Steam Navigation Company, the operations of which extend to South America and particularly the West Coast. This company, with a capital of \$7,193,000 lost about \$280,000 during the past fiscal year. The annual receipts of the company for British mail service amount to about \$97,000.

Taking up next the two largest French steamship companies, it appears

new bounty law adopted in January, 1893. In Germany, the important North German Lloyds have a capital of about \$9,740,000 and about 197,000 tons in shipping. The available profits of this company last year, notwithstanding a subsidy of \$1,000,000, were only \$146,000.

Drop Press and Drop Lifter.

The six-poppet drop press made by the Miner & Peck Mfg. Company of

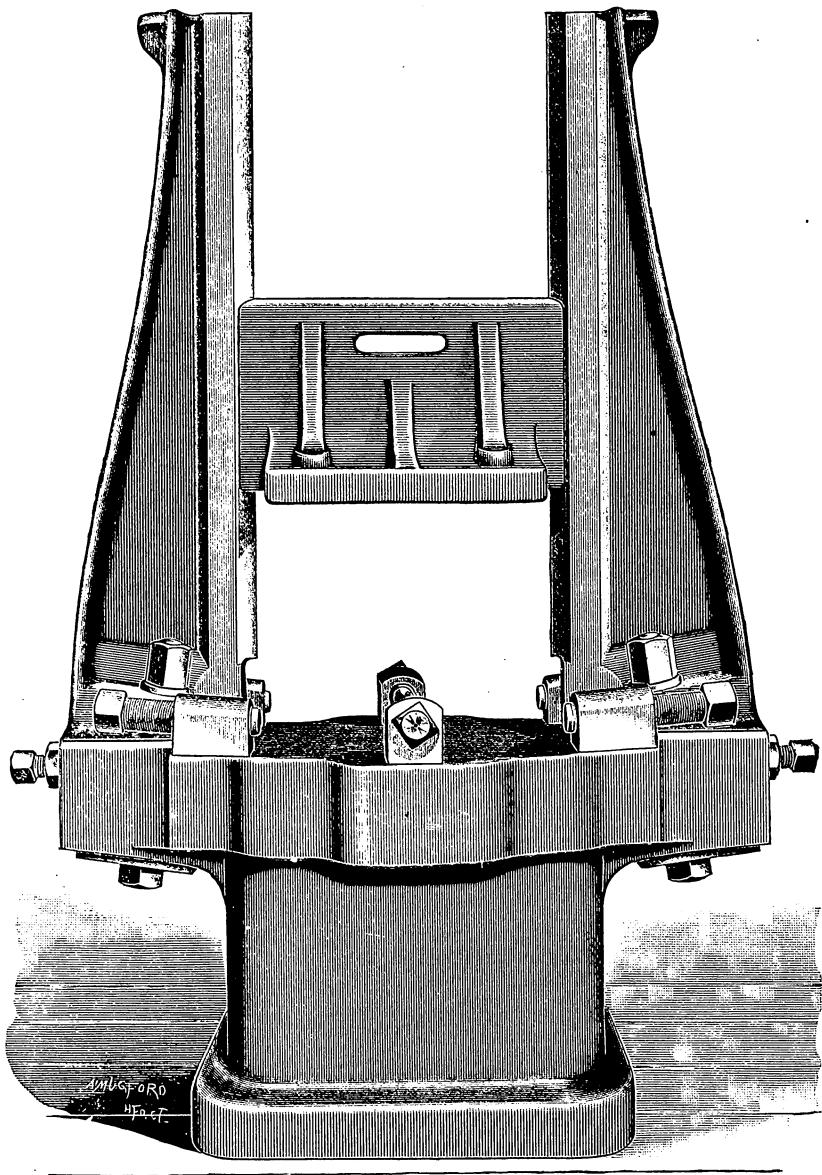


Fig. 1.

THE MINER & PECK DROP PRESS.

that were it not for State aid they would make a very poor showing. Thus the Compagnie Generale Transatlantique, with \$7,792,000 capital and owning 167,000 tons of shipping, receive every year about \$2,170,000 in subsidies and only distribute in dividends about \$390,000 annually. The Messageries Maritimes have \$11,688,000 capital, 202,000 tons of shipping and receive subsidies amounting to \$2,698,000 a year; the sum paid annually to shareholders in dividends is about \$585,000. It is estimated that in addition to the steamship subsidies, amounting to about \$5,000,000 per annum, the French Government will have to pay about \$1,650,000 yearly in navigation bounties under the

New Haven, Conn., is intended for use in stamping metal ceiling plates, metal shingles, and all work requiring square dies. This machine is made in several sizes, that illustrated in Fig. 1 being of sufficient size to take in a die 27 inches square. The method here shown of holding the square die is believed to be preferable to that of four poppets holding at the corners. The hammer is arranged to hold the soft metal by four bolts with projecting heads.

The poppets are fitted by the Peck improved process, are finished all over, and in such a manner that the screws have a perfect range. The holes for the poppets are bored out and poppets fitted to them and securely and accu-

rately held. The bolts for holding the guide rods are very large and have long nuts carefully fitted to insure them against coming loose, while under the heads of the nuts are large iron plates to relieve the guide rods from jar and its injurious effects.

These drops are arranged to be worked, if desired, by hand or foot power over a flanged pulley; but the manufacturers recommend that they be used with the Peck automatic lifter, shown in Fig. 2, for the reason that with this attachment much more, and more uniform, work can be produced than by foot or hand, and with less fatigue to the operator.

The frame of this lifter is of new design and is much heavier than the earlier forms. The length of the bearings has been increased, and on the main shaft, instead of making back bearing smaller, as in the former pattern, it is continued through of the same size as the crank bearing. Instead of having collars on the shaft at the bearings, the hubs of the

gear or the pinion, would be liable to break the frame. The crank illustrated is provided with fine adjustment, designed for silver and other fine work, and enables the blow to be changed in length by half inches. This form of crank is placed on lifters only when specially ordered. The shafts are made of hammered crucible steel; cranks, ratchet and dog of forged steel, and all the other parts of carefully selected materials.

These machines are now in successful operation in the stamping works of Lyles & Mills, 231 William street, New York.

A Curious Occupation.—In the cost accounts of South Staffordshire, England, rolling mills there is an item which finds no place in similar accounts in this country. It appears on the credit side, and represents the amount paid by an individual known as the "breezeman" for the privilege of hauling away,

having huge sideboards, containing breeze, are a common sight on the roads between Birmingham and Dudley. The "breezeman" derives his income from the sale of breeze, less the amount paid to the company for the privilege and the cost of labor. Usually he makes a good living. He rents the furnaces for a year and takes chances on having a large stock on hand on account of nailers' or axle makers' labor troubles.

It is stated that at several Lake Superior mines men have freely offered to go to work for their board alone. This has certainly been the case at many of the lumber camps in the mining country. Some time ago the Chandler Mine on the Vermillion range took off a steam shovel that was loading cars from stock pile and put in its place a gang of men. Figured on the steam shovel basis the pay of the men was to be 50 cents a day and possibly a trifle more later. On the announcement of work at this wage

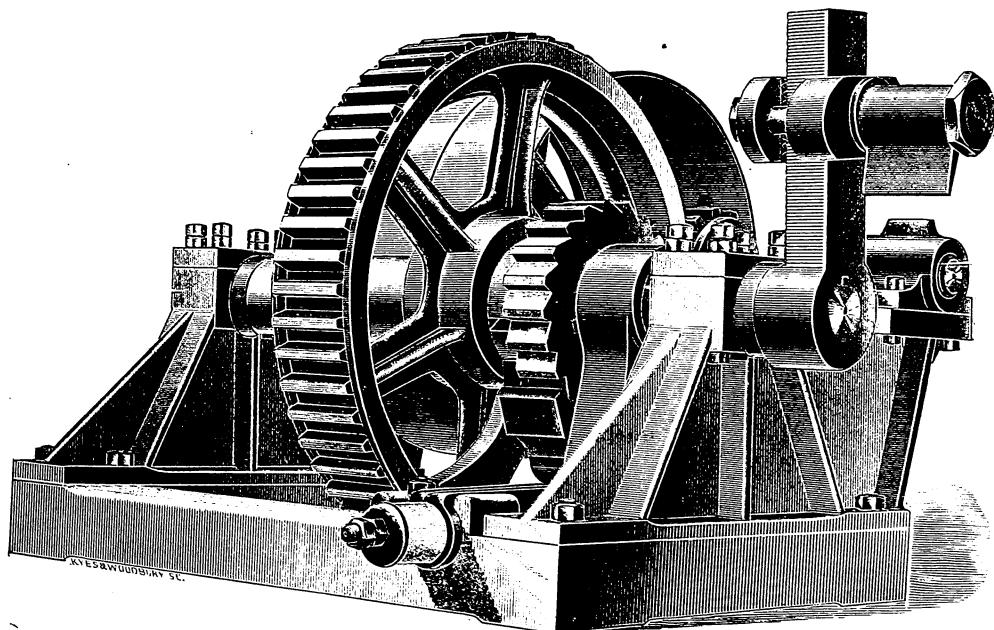


Fig. 2.

THE MINER & PECK DROP LIFTER.

lift and the dog cracks are made to act as collars, thus leaving the shaft of one size its entire length, with no shoulders to weaken it.

The strength of the gear and pinion has also been increased. The pillow blocks on the back of the shaft are bushed, these bushings being of uniform size, so that new ones can be inserted when the others become worn. In the place of cup screws, tapped into the frame to hold the main bearing caps, bolts are passed through the frame and held with check nuts. In the larger sizes the makers prefer not to have the sockets divided and with rubber springs inserted in the flanges, but to insert a rubber cylinder in the cavity in the hammer under the lifter belt. This arrangement has the advantage of allowing the pinion on the back shaft to be placed in the center of the back shaft, instead of at the end next to the bearing; and, thus arranged, should any extra strain accidentally come on the pinion, the shaft will spring and relieve the frame, whereas if the pinion is close to the frame an extra strain, such as the breaking of a tooth of the

without cost to the company, the cinders falling from the grates of furnaces. The consideration is usually about half a crown for two weeks for each furnace burning lump coal, and it is further agreed that the boiler ashes be removed free of cost, although they have no value. The cinders from the furnaces are taken by the breezeman to an open space, where they are spread on the ground about a foot thick. Women who are employed for the purpose then rake out all the clinkers and bats, leaving nothing but dust and partly burned cinders, which are still combustible matter. This is wheeled to a large tub with water running through it, and dumped therein. The water is agitated by means of a long rake, and as soon as the dust is washed off and the black cinders float on the surface of the water they are removed with a large sieve of about 1-inch mesh, and at once become a marketable fuel known as "breeze," used extensively in the shops where hand made nails are wrought into shape by women, and in shops making light axles, &c., also in all blacksmith shops. It meets with a ready sale, and carts

over 200 men—four times the number that could be worked—rushed down to the stock pile, grabbed up shovels and began to handle ore. It was with great difficulty that the mine management was able to cut this zealous crew to a size that could do work to advantage. It is evident enough that there is no unwillingness to work on the part of these idle and starving miners on the Lake-Superior ranges.

The fine exhibit of steel made at the World's Fair by Singer, Nimick & Co. of Pittsburgh has been removed to the office of W. E. Stockton, their Western sales agent, at 16 and 18 West Lake street, Chicago. The special features of this exhibit was that a very great variety of specimens were shown of small tools, drop forgings, parts of machines, hardware specialties, skates, &c., made by numerous manufacturers from the company's steel. In no better way could the reputation of this steel for fine work have been demonstrated. The specimens thus shown fill two large glass cases.

The Tesla Engine.

At the last meeting of the New York Electrical Society Nikola Tesla delivered an address, from which we take the following:

You have seen a few designs of engines described by the eminent speaker who is one of the most competent to talk on the subject, and who has shown us a great many complicated mechanisms. They are exactly adapted to illustrating what I have to say, and I would ask whether it is not worth while to attempt to simplify those mechanisms, which we have been using heretofore for the production of electric currents. When we look at a steam engine and inquire where the power comes from that drives the steam engine, we will always find that the power comes from a little box—a cylinder with a piston in it—and all the other appurtenances are really but to keep it going. You may do away with the fly wheel, with the cross heads, with the eccentrics, with all the appliances, provided that you can in some other simple way govern the motion of the mechanism. So then my first idea was to apply the motion of the piston, which is freely movable, to a magnetic field, to move a magnet or a coil in a magnetic field and so generate currents by this direct motion. Now let us see what we can do in that respect. First, we reduce the weight of the engine for the same pressure and the same piston speed to one-thirtieth or one fortieth if not one-fiftieth of its weight. Furthermore, we do away with all mechanical frictions. The engine designed according to my ideas has a mechanical efficiency of 99½ per cent. Now, that is in itself a very big item and renders it worth while endeavoring to make this mechanism a commercial success. But there are other far greater things. You will find that engineers often say what an advantage it is to apply the direct motion of the steam piston to a pump. In reality the advantage in a pump is but a very minute one. The water column has got an enormous inertia, and what we do gain in the direct acting pump is merely a matter of overcoming some additional frictions which we have in the ordinary engine. We may take the mechanical efficiency—I gather the data from various works—we may take the efficiency as say 81 to 82 per cent. at the full load. But the efficiency is much less on a varying load. Then, furthermore, we have got these variously estimated. I take the figures which I have found to be fair, giving this as the efficiency. Now the dynamo again has got mechanical losses due to friction, and, furthermore, the wire is never utilized fully in the dynamo. In my construction the dynamo may consist of a simple coil of the magnet, and a simpler coil, which is all immersed in the magnetic field. There is no useless wire. Consequently dynamo and engine, if they are reduced considerably in weight, increase in efficiency. There is only one engine which can equal it in output, and that is the turbine. With the steam turbine we can obtain an enormous output, and that is the reason why the steam turbine, in my opinion, may be found a valuable adaptation for driving dynamos; and then convert the motion by means of alternating dynamos; and I think the steam turbine has in itself a physical cause why it cannot surpass a certain efficiency, and that is that we drive turbines by impact. A turbine

might be very efficient if the medium which propels it were incompressible and homogeneous. But it cannot be efficient if we drive it by means of isolated shocks. Furthermore, we cannot in a turbine gain all the expansion. These causes, I think, will limit the efficiency obtained in turbines. But in reciprocating mechanisms we can, provided we obtain a sufficiently high speed of the piston, expand the steam at an enormous rate. It is perfectly practicable in these mechanisms which I have been working up to obtain, if you want, a speed of 100 meters a second, and while I do not contemplate producing such speeds yet it is quite possible to do it. But since we can produce higher speeds we might as well increase the speed two or three times, and so augment the activity of the mechanism and raise the efficiency. Furthermore, as I am enabled now to work without a packing, I found that in these mechanisms the packing is actually objectionable, the expansion occurring at an enormous rate, and the engine being of such character that the exhaust can be reduced to pretty nearly the atmospheric pressure very easily. The mechanical friction is reduced to such a small figure that we can raise the temperature of the steam very considerably. You know that in high pressure steam engines one of the greatest troubles is the lubrication. We can go so far with the mineral oil, we can go so far with ordinary oil, but then we reach a point at which we cannot go any further; the lubricant will not work; and I am informed by very able practical engineers that about 250 pounds per square inch of steam pressure is as high as we practically go. With this engine we can go much higher. I am now preparing a boiler which will give me up to 350 pounds pressure. It is very important, of course, to get the pressure very high. In these mechanisms we are confronted with two things. For what are they going to be used—for light or for power? If we want to drive motors we must have a long stroke and a slow frequency. If we want to operate lamps then we want a very short stroke and a very rapid motion. To have a high speed with short stroke we must have a great initial pressure, because, you know, the number of vibrations increases only as the square root of the pressure. So if we want to have twice the number of vibrations we must have four times the pressure. But, on the other hand, four times the pressure and twice the number of vibrations means eight times the output. So it is very important in this mechanism in which the power depends on the square to obtain as high a pressure as possible. It is on this line now that I am working.

We have had such reciprocating engines as far back as 1868 or 1870, and it would be a very erroneous idea to think that I had evolved something radically novel in that part of the mechanism.

It is more economical to produce rapid vibrations than low vibrations. But so far as the economy of the dynamo is concerned, and so far as the economy of the engine in general is concerned, it is better to produce a long stroke, because a long stroke means a high velocity.

I have an apparatus which runs lights in the laboratory, and shortly I think I will have something which will be ready for practical application. I think I am not mistaken in believing that we are going to have very shortly a means at hand of producing twice as much

electricity from coal as we can produce at the present time—provided I am not mistaken. This is subject, of course, to a test, but I am quite confident that it can be done. This is not, however, a subject which occupies me altogether. There are also other subjects.

The Consolidation of Mexican Iron Interests.

The newly organized Mexican National Iron & Steel Company, with a capital stock of \$3,000,000, are now in complete possession of the iron and steel plants and deposits formerly controlled by the Durango Iron Mountain Company. A temporary organization was effected on November 18, and the permanent organization with regular election of officers will be accomplished on January 1. Mr. Richard Honey will be president, but the other officers are not as yet definitely fixed upon.

The object and plan of the new company is to operate not only the mining of the vast deposit of ore at Durango, but to put in complete working order various manufacturing establishments already built at various points in the republic. The desire is to operate to the best advantage and interest of the Republic, and decrease rather than increase the price of iron used in Mexico. In an interview given the correspondent of *The Iron Age*, J. S. McCoughan of the company stated that his party can do this, if the Government of Mexico will do its part.

He professes that he and his company are willing that the import duty on iron ores be very materially lowered, if the authorities will then but stand by the standard rate of duties and treat every one alike.

By over \$200,000 spent in improvements last summer and fall, the Durango home plant now represents an expenditure of \$600,000. The improvements just made consist in the remodeling of the blast furnace, the addition of a hot blast stove and a 600 horse-power blowing engine, and other additions of a minor nature to the already large and very complete plant. In addition, the new corporation are making ready to begin the manufacture of light road rails, I-beams and various kinds of structural iron for the supply of the building trade. About 200 men are now employed at the Durango Works, and this number may possibly be increased in time.

Next year enlargement will be made of the company works at San Miguel, in the State of Hidalgo, and the steel plant there specially put in order for large operations at a total expense of \$500,000. The plant at Encarnacion is running exclusively on charcoal bar iron, which is equal to Swedish goods and is making for itself a good place and fine reputation in the iron trade.

The above and all the other works of the company in the Republic, including those at Acapulco, are to be steadily operated and worked to their full capacity of production in the future.

Shipments from the deposits of Durango and other mines owned by the organization will also probably be increased. Four hundred carloads of iron ore were shipped out from Durango last summer, going to Monterey, San Luis Potosi, San Miguel, Allende and other points. If the import duty on iron ore were removed in the tariff revision now being figured on by the United States the lead smelters of Kansas City would be added to the shipping points. Ne-

gociations are also on for shipping large consignments of ore to Europe via Tampico.

By the plans in the mind of the company, which have ample capital to carry them out, the famous Iron Mountain of Durango, which has been worked for 50 years with no particular loss to its mammoth storage of mineral, will send out an increasing amount of its valuable body to the world of commerce.

The Durango formation is claimed to be the largest deposit of iron ore in the world, and has been noted as such for hundreds of years. The Iron Mountain was given extended mention by Baron von Humboldt when traveling in Mex-

The California Tire Upsetter.

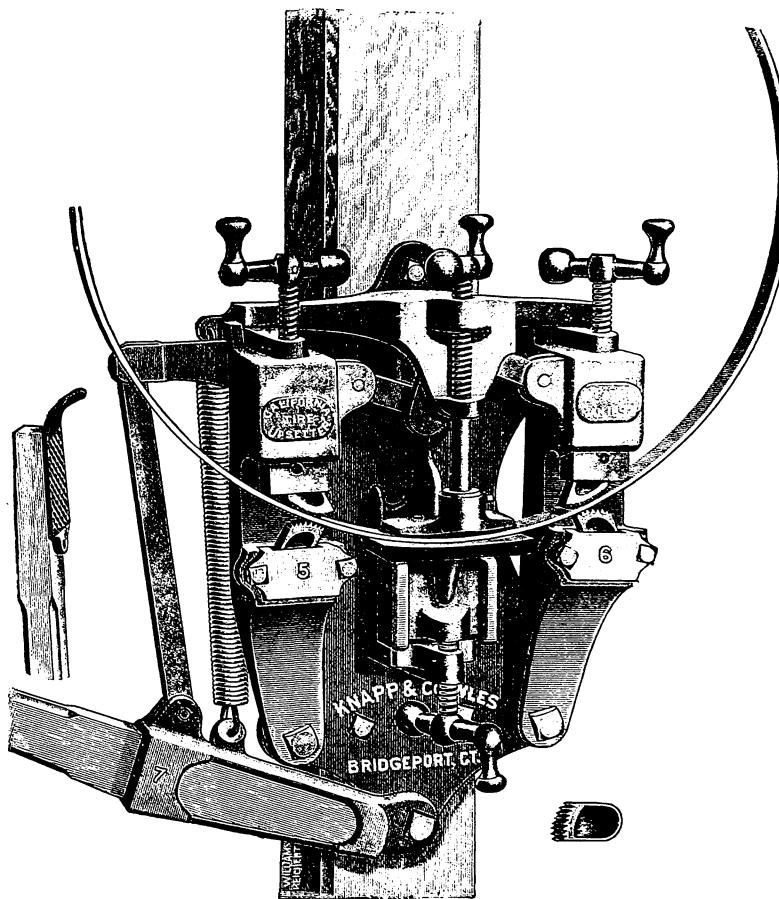
With this machine, which is made by the Knapp & Cowles Mfg. Company of Bridgeport, Conn., tires can be shortened without cutting and without the use of a hammer. To operate the machine the center plate is lowered to conform to the circle of the tire, which is placed in position as shown. The center plate is then screwed down so that the jaws firmly grip the tire. The toothed jaws 5 and 6 are then adjusted properly to grip the tire when the lever 7 is depressed, thereby bringing, by means of the connections shown, the gripping jaws toward each other and

become what it formerly was, one of the most important Government work yards for the navy to be found on the Atlantic seaboard.

San Francisco News.

SAN FRANCISCO, December 11, 1893.

During the past two weeks we have had the first heavy rains of the season. In fact, the rains were pretty constant for one week. These rains have put the ground in good shape for the labors of the farmer, and there will be a goodly breadth of land seeded to wheat and barley, with the promise, should later rains be sufficient, of bountiful crops. Everything, therefore, favors the outlook of the agriculturist—everything except the prices of produce, and there is no reason for hoping that they will be any better next year than now. Farmers are disgusted with the prices that they have received during the year—in the case of wheat, the great staple of California, 16 per cent lower than ever before in our history. Farmers and jobbers have been waiting, hoping against hope that prospects would brighten and that prices would improve, but they have not. It is just possible that fruit will command better prices in 1894 than it has done this year, but agriculturists are not sanguine, and, therefore, I do not expect any marked revival of trade before next fall. In the city the demand for building hardware has fallen behind that of 1892 for the same time, although there are nearly as many buildings being contracted for as there were a year ago. In other departments the demand is very light. There is but a limited demand for machinery at present and a decided dullness is prevalent. The demand for agricultural machinery has about come to an end for the year. Here the outlook is probably about as good as that for any preceding year. It is true that the great houses of the city have saved a good deal in the matter of freights when compared with what they used to pay, but lower prices have taken all the profit out of the business. The lowering of freights has led to the lowering of prices, and not only on goods, but right along the line. In fact, in many departments prices have been absolutely down to cost, and less money has been made than there was in 1892. Happy where the importer has not fallen behind, and where he was always able to get a new dollar back in exchange for an old one. But all our houses are possessed of abundant capital, and well able to stand financial strains and the pressure of hard times. They have made money in the past, and when a change takes place they will hardly even remember the dull year of grace 1893. As noted, the reduction in freights was in one respect disappointing, as it brought goods here at low rates to compete with stocks already in the market; but it will add to the field for San Francisco's trade, and its beneficial results will be felt even a score of years from now. The year 1893 will be pointed out by our mercantile historians as the one when the chains of railroad and steamship were first broken by the combined efforts of the banded merchants of San Francisco. The Clearing House exchanges are a pretty fair index of the conditions of trade amongst us. For the week ending Saturday, December 9, they were \$12,546,474, as against \$16,661,619 for the corresponding period in 1892. Here is a falling off of about 25 per



THE CALIFORNIA TIRE UPSETTER.

ico in 1803, and has been the subject of much attention in the later years of the century.

The collapse of the great bridge now under construction between East Louisville and Jeffersonville, Ind., which occurred last Friday, was one of the greatest disasters of the kind experienced of late years. The accident was caused by the strong current and heavy wind carrying away the iron and timber false work of the 500-foot span in the middle of the river, the fall of which brought down the other spans with it. Many workmen were drowned or buried under the falling mass of debris. The structure was the work of the Phoenix Bridge Company of Phoenixville, Pa., and was being erected by them. Every precaution had been taken to prevent disaster, and it is stated that the company have received a dispatch from the engineer in charge of the railroad for which the bridge was being built, exonerating them from all blame.

upsetting the tire. If the first compression is not sufficient the left hand screw is loosened, the lever raised and the screw retightened. In this way two or three compressions can be obtained at one heat. Bar iron can be upset by adjusting the center plate in line with the work.

A proposition is advanced to reopen the Charlestown Navy Yard. The resources of this yard are such that boats of comparatively small size could be built there, and much repairing could be done. A few years ago, through neglect or inattention, the Charlestown yard was allowed to get into bad condition and it was necessary to make a number of repairs before vessels could be kept at the docks there. For this reason the Navy Department declined to send ships or to build them at that port; but at last the docks have been put into good condition again, under an appropriation made by the Government for that purpose, and there is at present no good reason why the yard should not

cent, in volume of trade, and it is just as true in hardware, iron and steel, machinery, &c., as in aught else. Of course as in hardware, nails, &c., there have been reductions in price. The quantity of goods disposed of has not fallen off so much as the above would seem to indicate.

There will be a very fair display of machinery, hardware, &c., at the winter fair in this city. Some of our manufacturers of machinery are making preparations for a very large display, and here the East and the West will be able to compare notes and each to benefit somewhat by and learn somewhat from the other. Our largest manufacturers and importers of agricultural machinery are contemplating making a display that shall cost thousands of dollars, so that Eastern manufacturers must needs look to their laurels. All their fair buildings have made good headway and by January 1 will probably be ready for the reception of exhibits.

There have been no particular changes in prices in any line since my last letter. As a general rule it may be said that there cannot be any advance, as competition is too keen, while quotations are too low to render it possible to effect a reduction except at a loss. Pig iron keeps at \$18 to \$22, according to quality; nails at \$1.65 as a basic price; tin plate at \$5.50, and pig tin at 21 $\frac{1}{2}$ cents.

The Ironton Structural Steel Company of Duluth, Minn., have just made a successful test of their new principle of structural beam rolling machinery, and have accomplished a result that is entirely novel in the history of steel manufacture. A 24-inch steel beam 30 feet long was rolled by a single set of rolls in one operation and without removing the billet from the original rolls. The beam was rolled from a steel billet 37 inches long, 30 inches wide, and 7 inches thick in 15 passes through the rolls. It is a standard section, 80 pounds to the foot. A few weeks ago a 15-inch beam was successfully rolled by the process, which is the invention of James E. York, general manager of the works. The mill is constructed on the universal plan, with sets of horizontal and vertical rolls, capable of being adjusted so as to turn out varying sizes and thicknesses on the same train. It is claimed that the cost of turning a steel ingot into a finished beam is reduced 40 per cent. by this process. There is only one other firm in the United States capable of rolling a 24-inch steel beam, and there the work is done by the ordinary process.

A new forge shop is to be built and equipped for the North Carolina Agricultural and Mechanical College, Raleigh, N. C. This institution is referred to as meeting with great success.

One must go abroad to learn what is going on at home. The London *Engineer* prints a long leader on President Cleveland's tariff message, and in the course of its wise review remarks: "In the United States almost every 'interest' is controlled by a 'ring,' and the system has been pushed to lengths which are almost ridiculous. Thus, for example, a 'ring' was formed to control nails. But nails are sold in kegs, and very soon after the nail ring had been formed a keg ring was established, on somewhat antagonistic principles."

The nail manufacturers in this country disseminate well. While they are industriously losing money in cutting nails, they are paying tribute, too, to the "keg ring." Since our nail manufacturers make their own kegs, they have probably gone into this "ring" for the amusement of their bookkeepers.

Vacuum Breaker.

When a back flow of water from a condenser occurs all passages up to the check valve are filled with water, and before the condenser can resume its proper function the water must be discharged. A discharge will naturally

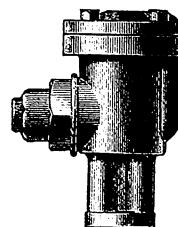


Fig. 1.—Perspective View.

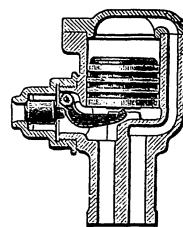


Fig. 2.—Inside View.



Fig. 3.—Fitting.



Fig. 4.—Fitting, Sectional View.

without any perceptible change in the speed of the engines. The vacuum breaker may be attached either to the check valve in the manner before described, or by means of pipes and the special fitting shown in Figs. 3 and 4 to the engine and condenser side of the exhaust pipe. Fig. 5 shows the check valve with vacuum breaker attached.

Trade-Marks.

A decision of considerable interest to manufacturers and others using trademarks has recently been handed down by the United States Supreme Court in the case of a suit brought by a firm of millers to restrain another firm of millers from using the word "Columbia" in connection with their special brand of flour. The court refused to grant the application of the plaintiffs, and denied their exclusive right to use the word "Columbia" as a trade-mark for flour; laying down, at the same time, the following comprehensive propositions as the sole rule and practice in the establishment of a valid proprietorship in trade-marks:

1. That to acquire the right to the exclusive use of a name, device or symbol as a trade-mark, it must appear that it was adopted for the purpose of identifying the origin or ownership of the article to which it is attached, or that such trade-mark must point distinctively, either by itself or by association, to the origin, manufacture or ownership of the article on which it is stamped. It

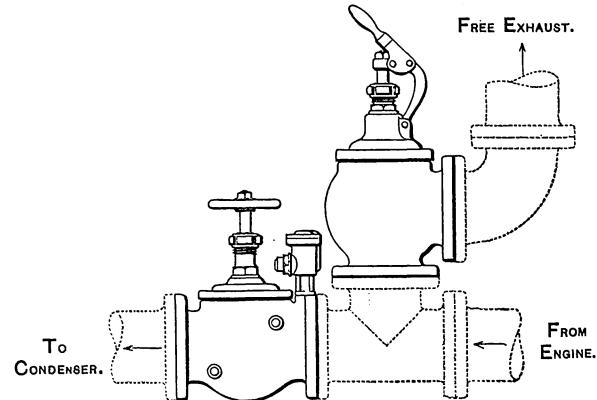


Fig. 5.—Check Valve with Vacuum Breaker Attached.

VACUUM BREAKER.

take place as soon as pressure in exhaust rises above atmospheric pressure, but this in itself may be too much of a disturbance to the regular running of the engine, and may necessitate several revolutions to recover regular speed by the change of condition. To effect a prompt discharge of this water the vacuum breaker shown here has been designed by L. Schutte & Co. of Philadelphia.

As will be seen, the vacuum breaker consists of a valve closing against the atmosphere and actuated by a piston. A passage below the piston communicates with the condenser side of the check valve, and another passage above the piston leads to the engine side. The weight of the piston keeps the air valve closed. The slightest difference in pressure caused by a back flow of water will cause the piston to rise and allow the air valve to open; and in the opposite case, when exhaust pressure rises the piston will drop, the air valve close and the condenser resume its functions

must be designed as its primary object and purpose to indicate the owner or producer of the commodity, and to distinguish it from like articles manufactured by others.

2. That if the device, mark or symbol was adopted or placed upon the article for the purpose of identifying its class, grade, style or quality, or for any purpose other than a reference to or indication of its ownership, it cannot be sustained as a valid trademark.

3. That the exclusive right to the use of the mark or device claimed as a trade mark is founded upon priority of appropriation.

4. Such trade-mark cannot consist of words in common use as designating locality, section or region of country.

An importer from Great Britain doing business in Dublin and Liverpool while here recently on a visit to the exposition called on his way back on a firm in this city of whom he had bought

goods for over 20 years. In conversation he remarked that he had just bought a traction engine for shipment to Great Britain. The senior member of the house here (being themselves manufacturers of some classes of machinery) asked in surprise if he had secured it as a curiosity, knowing such goods were originally made there and are still largely. The visitor said it was purely a business transaction, that a similar article there would cost about \$1500, while this one in round figures cost \$1000 laid down there, besides being much better in every way.

THE WEEK.

Detroit, Pittsburgh, Buffalo, Philadelphia and other large labor centers are rising nobly to the situation in making provision for the relief of their unemployed poor by means of public works and organized private charity.

One of the few remaining refuges is about to be closed to forgers and embezzlers. Argentina, it is announced, has entered into an extradition treaty with Great Britain, which covers these offenses.

Samuel Gompers has been re-elected president of the American Federation of Labor.

Representative Chickering has introduced a bill in Congress directing the Secretary of War to have surveys made for a ship canal from the great lakes to the Hudson River.

The City Council of St. Paul has recently paid out \$9000, in sums of \$1.50 per half day, to the unemployed of the city, and has now voted \$5000 more for the same purpose. Only \$1 per half day will, however, be paid henceforth.

Tramps are flocking into Kansas in great numbers in consequence of a circular recently issued by Governor Lewelling instructing the police not to molest them and declaring the vagrant law unconstitutional. The Governor has a fellow feeling for the vagabond fraternity, as he confessed to having been a member of it in his early years.

New York and Cincinnati are now in telephonic communication.

According to the annual report of the Director of the Mint, just published, there has been an increase of \$318,295,000 in the aggregate circulation of gold and a decrease of \$111,600,000 in the aggregate of silver in the principal countries of the world during the 12 months covered by his report. He puts the gold circulation of the world at \$8,901,900,000, and that of silver at \$3,931,100,000.

The Federation of Labor now in session in Chicago has passed a resolution of thanks to Governor Altgeld for pardoning the anarchists. What is the connection?

The contract for furnishing the first smokeless powder for use by the United States army was last week divided between two firms, the Leonard Powder Company and the California Powder Works, each to furnish 5000 pounds. The division was made in order to compare the merits of the two powders.

A friendly act of the French Government is the presentation to the State of New York of the major portion of its World's Fair educational exhibit, consisting of the work of pupils in the primary, secondary and normal schools

of France, as well as a pedagogic library, containing text books used in the public schools, works of reference &c. The collection will be placed in the Capitol at Albany.

At the monthly meeting of the Board of Trade and Transportation in New York last week a report was adopted recommending a system of revenue marine as an adjunct to the United States navy.]

Darius Davison, the naval architect, is, it is said, working on the plans of a ship that is, he says, to be the coming Atlantic liner. The vessel is to be 1000 feet long, 80 feet wide, 70 feet in depth, and to have a displacement of 45,000 tons. She will be moved by four propellers driven by a 50,000 horse-power engine, and the distinctive feature of the ship is a projecting bow and stern, each 150 feet long, an entirely new departure in marine architecture.

The King of Korea is rapidly adopting the conveniences of Western civilization. His Majesty has lately purchased in America an incandescent electric light plant, which is now being installed in his palace, consisting of 2000 lamps of 16 candle power, with steam engine, dynamos, &c., complete.

Germany's naval experts have decided that the best color to paint their cruisers and torpedo boats, in order to make them as difficult of observation as possible, is a kind of dirty buff. They recommend that the whole of the vessels should be uniformly coated with this color, and that nothing on their decks or upper works should contrast with it.

A motion has been brought forward in the English House of Commons asking that a committee be appointed to inquire into the management and expenditure of the British section of the Columbian Exposition. Assertions are made that the signatures on certain documents were forged.

A very significant illustration of the dullness in railway business is shown in a recent announcement that the Pennsylvania Railroad managers are cutting down expenses on their lines in every possible direction.

Northwestern stocks of wheat in elevators last Saturday were estimated to be 28,408,525 bushels, an increase for the week of 1,250,000 bushels in addition to the grain in mill storage.

It is announced as probable that a trunk line pool for export traffic will be established soon after the beginning of next year, with the object of bringing about a uniform restoration of east bound railroad freight rates between Chicago and New York, more particularly in respect to the grain traffic.

During the lake shipping season just closed 10,000,000 barrels of flour were received and handled at Buffalo, by far the largest record of any flour depot in existence. The season began April 16 and closed December 17. The average number of barrels handled daily was 40,000, but on some days as many as 150,000 were taken out of vessels and stored in warehouses pending re-shipment by rail and canal.

At a recent meeting of the British Association the Callendar platinum pyrometer attracted general interest. The difficulty of reading high temperatures,

such as that of a furnace, has led to the employment of an electrical method, in which the temperature is determined from the change of electrical resistance of a platinum wire when exposed to the high temperature. Mr. Callendar finds that the law of increase of resistance remains simple and constant for the extremely wide range of temperatures included between the temperature of liquefaction of air and that of a blast furnace, and his pyrometer is founded upon this principle.

It is already known that the William Cramp & Sons' Ship & Engine Building Company, of which G. Douglas Petrie, 39 Cortlandt street, is New York agent, has purchased from the Manganese Bronze & Brass Company, Limited, the formula for Parsons' manganese bronze and Parsons' white brass. The former is used for propeller wheels, as well as for any other purposes where a very strong, durable bronze is required, while the latter is valuable as an anti-friction bearing metal. Both of these alloys are now being successfully manufactured by the Cramp Company, the builders of the new cruisers "New York" and "Columbia." The "New York" has two three bladed propellers, and four triple expansion engines, aggregating 16,000 indicated horse-power, while the "Columbia" has three three bladed propellers and three triple expansion engines, aggregating 21,000 indicated horse-power, from which it can be readily understood that a very large amount of manganese bronze and white brass must have been used in their construction. Ten tests of specimens of Parsons' manganese bronze, which were cut from propeller blades cast by the Cramp Company in the last six months show the following average results: Elastic limit, 24,665 pounds; elongation in 2 inches, 20 per cent.; ultimate tensile strength, 60,375 pounds.

The Westinghouse Electric & Mfg. Company of Pittsburgh have just completed the erection of what is claimed to be the largest lighting machines ever built. These machines are for the Louisville Gas Company, Louisville, Ky., and a feature of their construction is that the fly wheel and the armature are combined, which effects a saving of both labor and space. Each machine has a capacity of about 9000 lamps; each plant stands 20 feet high, and the armature is 12 feet in diameter and makes 90 revolutions per minute. Each machine weighs 50 tons, and at a recent test witnessed by a number of experts the results attained were pronounced highly satisfactory. The above-named concern are also building the armatures for a 6-ton electric locomotive, which is being constructed at the works of the Baldwin Locomotive Company, in Philadelphia, for the North American Company. They are being wound for 900 volts at 225 revolutions per minute, the equivalent of 35 miles an hour. The motors are calculated to give a pull on the draw bar equal to 30,000 pounds, or one-fourth the weight of the locomotive, which is sufficient to move a very heavy load. The locomotive is to be used for hauling heavy freight trains short distances and for switching purposes, and is purely experimental. It will have four pairs of drivers 56 inches in diameter. If it meets the expectations of its designers other locomotives will be built in the near future.

The Iron Age

New York, Thursday, December 21, 1893.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - HARDWARE EDITOR.
JOHN S. KING, - - BUSINESS MANAGER.

The Employment of Idle Money.

The enormous accumulations of loanable funds in our financial centers opens a wide field for activity for that clever and useful negotiator, the promoter. He is usually quick to discern the direction into which popular favor can be diverted when the time comes to withdraw funds from deposit in banks and trust companies and employ them in active work promising greater remuneration. It may be acknowledged at once that the time has not yet come when moneyed men have sufficiently recovered from their scare to allow them to take hold of new ventures. But a good deal of preparatory work must be done, and it is probable that where it has not been undertaken it will soon be required. The experience of the past year has been hardly such as to encourage much outside capital to jump into the manufacturing branches which *The Iron Age* represents. Nor is the uncertainty concerning what Congress will do with the tariff calculated to encourage investment. Probably the best chance for fresh capital lies in the rehabilitation of some of the manufacturing plants whose owners have failed. We do not, of course, refer to those undertakings which have been forced into receivers' hands simply through internal quarrels and intrigue. As is well known in the iron trade, there are a number of conspicuous cases of this character. But there are a number of works of recognized vitality and capacity for future money making which can be acquired for much less than the actual hard cash invested in them. Their competitors will hardly regard the infusion of fresh blood into them as a blessing.

To the iron, metal and allied trades the first source of orders has already come through the ability of municipalities to market obligations at fair rates. The manufacturers of pumping machinery, the pipe foundries and others have received quite a number of orders lately. The fact that prices obtained are unprecedentedly low has tempered their enthusiasm.

Another line in which an investing movement has started and is likely to develop very rapidly is the construction of suburban electric railroads. It is well known that many of these have proved very remunerative during their short life, so that the promoter of such schemes can make a very good showing by inference. We expect to witness a very rapid and considerable development in this branch, which will

give a good deal of work to our industries.

There seems to be little chance for the promoter of standard steam railroads, because the market for this class of securities is overstocked now and because the majority of the great banking institutions who issue them have still their strong boxes filled with bonds underwritten but not placed by them.

There is quite a good deal of preparatory work going on in building circles, but it will take some time before money freely flows into the old channels of real estate improvement.

There is one point which American manufacturers should consider, when contemplating the contingency of the passage of the Wilson bill, and that is, that the present plethora of money would make it relatively easy to raise capital to back up importing partnerships, even if foreign funds did not eagerly seek such opportunities.

The Fate of Compulsory Arbitration.

Labor is able to take care of itself and proposes to fight its own battles. This is the decision in a nutshell which was arrived at last week in the great convention held at Chicago by the American Federation of Labor. A resolution had been submitted by a representative of the Amalgamated Association of Iron and Steel Workers instructing the president of the Federation to formulate a bill and endeavor to have it enacted into law by the legislatures of the different States "making it obligatory on the part of corporations and the representatives of capital to treat and negotiate with the representatives of labor, in conference or otherwise, in the settlement of wages disputes, and in other matters when their services are called for."

The matter was referred to the Committee on Resolutions, who reported non-concurrence, which precipitated a discussion of the expediency of a compulsory arbitration law, with the result that the convention, by an overwhelming vote, sustained the report of the committee. The discussion, as reported, was extremely interesting, as showing how the leading spirits of the great trades unions which constitute the Federation are disposed toward arbitration in general. The influence of the iron and steel workers, it is pleasing to note, was exerted in favor of the civilized method of settling strikes and labor disputes. They were unable, however, to stem the tide of opposition, which came most strongly from representatives of tailors, bakers, tilelayers, &c.

It might be supposed that the lesson of the late great coal strike in Great Britain would have been deeply impressed on the minds of these delegates, who had come together ostensibly for the purpose of considering the best interests of the wage-workers whom they represented. This is the most notable instance in recent industrial

history of a great strike giving promise of running on indefinitely, notwithstanding evidences of terrific punishment on both sides. It would have probably been running along yet if the British Government had not interfered and practically compelled a settlement which seems fairly satisfactory to all concerned now that the controversy is over. This was referred to in the discussion, but without much effect. The statement was made by a delegate that arbitration was only possible under special circumstances, and that when these conditions existed a dispute would naturally seek that means of settlement without the intervention of a statute to enforce it. The assertion, however, which seemed to have the greatest force in making the opposition effective was that if arbitration were compulsory by statute the workingman would find himself more often called on to defend himself from a demand for a reduction in his wages than the law would be invoked to secure advances. The prediction was made that with a compulsory statute one compromise after another would be demanded by employers, until labor organizations would be compromised out of existence.

The principal opposition to compulsory arbitration, when these opinions are sifted, seems to arise from the fear that in some way labor organizations will then be supplanted. The rights of labor once acknowledged by the law, and the interests of workingmen from that time carefully guarded by the machinery of government, there would then be very little further use for trades unions and all their complicated and costly machinery. This is an end by no means desired by labor agitators, many of whom are now receiving larger incomes with much less work than if employed in their regular vocations at the bench or the machine. It is, however, the natural drift of this period, and although labor leaders may endeavor to check the movement they will be unable to stay its progress more than temporarily. The temper of the great mass of the people is in favor of some general measure which will put an end to serious strikes in important lines of industry which, when in progress, interfere with the comfort or convenience of the people of a whole community and often of a large part of a State, or, in fact, several States.

The labor question has become so prominent of late years and has so forced attention to it by publicists that it is understood much more fully than at any previous time. The public are less disposed now to let the disputants "fight it out," as though the contest was merely like a dog fight, but regard a labor dispute with much impatience, as something which should not happen, and if it unfortunately does break out they wish it settled as quickly as possible. The American Federation of Labor may maintain its stand against compulsory arbitration.

or against all arbitration, but unless it has something more practical to offer than the old appeal to endurance or brute force the great association will discover at no distant day that its followers have disintegrated by the operation of outside influences and that the occupation of the leaders has gone.

The Western Wire Trade.

It seems but yesterday that attention was called in these columns to the dangerously rapid expansion of the Western wire trade. It was, however, some two years since. At that time the Washburn & Moen Mfg. Company were building a great plant at Waukegan, the Joliet Enterprise Company were building another at Joliet, and the Chicago Wire & Spring Company had in hand a third at Wireton Park, all in the immediate vicinity of Chicago. About that time, also, a fourth wire plant was undertaken by the Clark & Windsor Wire and Spring Company at Joliet, and subsequently another was built by the Superior Barb Wire Company at DeKalb, Ill., which has but recently been put in operation. The expansion of the Western wire trade, if all these enterprises were in active operation to-day, would have been something enormous, especially as the capacity of old works has in the meantime been largely increased. But what was threatened has not come to pass in its entirety. Instead, some of the most ambitious of these schemes have come to grief. The Chicago Wire & Spring Company's great works were not completed for lack of capital, although a large part of the machinery was installed. At Joliet, within the last 12 months, three wire trade failures have occurred—the Joliet Enterprise Company, the Clark & Windsor Wire and Spring Company and the Ashley Wire Company. Of these, the Joliet Enterprise Company failed because the works were laid out on too large a scale for the capital of those interested, but the other concerns have been driven to the wall on account of the unprofitableness of the wire trade. They were well managed, but could not stand the pressure of low prices and a tight money market. The other new establishments are in such strong hands financially that they have gone ahead with no interruption, and will unquestionably be able to survive this era of little or no profit.

Those who contemplate the erection of new wire works in the West, and there are a few, may well pause to contemplate the conditions now prevailing. The works in operation are abundantly able to supply the demand in connection with their colleagues located further East, who market some of their product in the Western States. The time may come when an expansion of production will be necessary, but it now seems remote. When a reverse in business does occur, the bankrupt establishments will again become

factors in the trade. They are all well located and well equipped. A different set of capitalists will probably acquire the properties at a low valuation, but that operations will be resumed at some time is inevitable. The disasters which have overtaken the original investors are deplorable, but they were plainly caused by an expansion of the trade beyond its safe requirements.

Maneuvering for position is quite lively at the present time between the sellers and buyers of coke. The period for annual contracts is approaching, and, as is natural, a determined effort will be made to prevent a further decline. While furnacemen profess to look forward to a repetition of the 90-cent coke days, producers have always claimed that \$1.25 at oven in the Connellsville region means exhaustion of valuable lands at an actual loss. One fact is much dwelt upon. Under the present sliding scale labor is paid on the basis of a minimum selling price of \$1.75 for furnace coke. Our quotation for weeks has been \$1.10, and contracts have been made very close to \$1, so that the sliding scale is manifestly unjust to the coke operators. It seems reasonable to expect that the principal producer will attempt to arrive at some readjustment. As is well known, the principal interest is identical with the largest aggregation of steel plants in the Pittsburgh district, so that the furnace plants in Pittsburgh, in the Wheeling, Mahoning and Shenango districts are dependent for their supply of coke upon their keenest rival in the iron trade. It is stated that the great steel company referred to is in a very good position to take care of itself in the event of a shutdown at the ovens in the Connellsville district, and that, therefore, two ends might be secured through a strike, viz., the lowering of wages and the squeezing of rival steel manufacturers. Against such a course would be the encouragement given to Eastern manufacturers using anthracite and to the producers of coke in West Virginia, aside from sentimental considerations as to the position of the wage earners in the Connellsville district and the men who have partial employment in the Pittsburgh and tributary districts. Still, a strike in the Connellsville coke region is a contingency which the steel trade must not fail to keep in mind during the next six weeks.

Those who advocate the passage of the Wilson bill attempt to make a good deal of capital out of the compensation offered to manufacturers through the potent aid of free raw materials, iron ore and coal. Let us state at the outset that as metallurgical fuel none of the foreign coals available to the Atlantic and Gulf ports can be of any service whatever. Nova Scotia coal is not of such quality as to yield a coke which American ironmasters would be glad to use. In the heavy iron and steel trades the cheapening of cost through a possible lowering in the price of steam fuel would be insignificant.

It is, of course, quite another matter with iron ore. Let it be assumed that the blast furnaces within reasonable access to the coast would save the entire duty of 75 cents per ton, or taking the leanest ore likely to be imported, a maximum of \$1.50 per ton of pig iron. This compares with a maximum cut of \$4.40 on Bessemer pig, \$4 on Scotch foundry, makers' brands, \$4.75 on Scotch warrants, and over \$5 on Middleborough warrants. Figuring waste, the "compensation" of free iron ore would amount at a maximum to, say, \$1.75 on soft steel billets, as compared with a cut of nearly \$5 per ton by the proposed duty. The former figure also applies to rails, when the estimated maximum cut in the rate is nearly \$9. In the whole line of rolling mill products, the maximum compensation through free ore, provided the American manufacturer got the whole advantage, would not go beyond \$2, making the most liberal allowance for waste in manufacture, whereby the quantity of free raw material used would be increased.

It is significant that orders for cars which are now being placed by railroads are stated by the purchasers not to be an outgrowth of present necessities. They have plenty of cars to handle the business now offering. But it is encouraging to note that at the same time the managers of these railroads think that the new cars will be needed at a reasonably early day, and that it is wise to buy them now when so many works are in need of orders and prices are the lowest ever known.

At Pittsburgh each lodge of the Amalgamated Association of Iron, Steel and Tin Workers is working for the relief of its own members. No funds are being drawn from the National treasury for relief, except in rare cases where the said lodges are entirely without money and unable to help their destitute members. There is a general relief movement among the lodges where individual destitution is looked after in extreme cases.

William W. Steele, foreman of the wire department of the Barbee Wire & Iron Works, at Lafayette, Ind., has just completed a massive elephant, 10 feet high and 12 feet long, for the mid-winter California exhibit to be held in San Francisco. When placed on exhibition it will be covered with California oranges. The frame will require 80,000 oranges to cover it. The design is a clever piece of mechanical art.

Krupp guns are usually associated with the tragedy of war. An instance has recently occurred, however, says the Philadelphia *Ledger*, where a Krupp gun played its part in a queer little comedy. The Lilinotian Republic of Andorra bought a Krupp cannon which will carry a ball 18 km. As the Republic is only 6 km. wide the cannon cannot be fired without dropping its missile into foreign territory, Italy or France, which might be regarded as a hostile demonstration. Andorra evidently does not require a full grown gun.

CORRESPONDENCE.

The Boilers at the World's Fair.

To the Editor: Not content with appealing to the courts with a view of preventing the installation of our boiler alongside of their own at the World's Fair, and thus enabling a comparison to be made between the two, the Babcock & Wilcox Company have undertaken to belittle the honor reaped by us and other companies to whom medals were awarded. In a letter recently addressed to certain trade papers and on a placard which they attached to their boilers at the Fair, they state that "They were informed that it was the purpose of the jury to make awards upon boilers based entirely upon the written statements of the competitors, without tests or any personal knowledge in the possession of said jury concerning the comparative operation, construction, economy or durability of said boilers. Believing that an award based on such insufficient knowledge would be of no practical value, they declined to make any such written statements for the purpose of receiving an award."

The Babcock & Wilcox Company seem to be laboring under a misunderstanding of the conditions under which the award was rendered to us at least. The jury, not content with simply reviewing our claims, detailed one of their number to investigate our boiler in actual operation at as many different points as could be reached. The batteries at the World's Fair were not alone subjected to the closest scrutiny and examination, but a number of plants operating in Chicago were visited, as well as in Circleville, Ohio, Pittsburgh, Pa., and also Allentown, Pa., at which latter place a Babcock & Wilcox battery was operating alongside of ours, and a comparison was made between the two.

With reference to a test, it is well known that efforts were made by the Jury of Awards to have tests made on as many boilers in the boiler room as possible. To that end they addressed a circular letter to the exhibitors proposing that each one should bear the expense of having a test made on his plant. None of the other six companies exhibiting in the main boiler room would agree to submit to this charge except ourselves. We not only sought a test, but addressed a letter to the Jury of Awards in which we challenged each competitor in the main boiler room to a test, but we wanted a competitive test or none at all, objecting to having the results of a test conducted scientifically by such men as were proposed to make it, compared with the "dress parade" tests published by other companies.

The attitude of the Babcock & Wilcox Company cannot be considered altogether consistent when it is borne in mind that their representative on the witness stand stated that their boilers had not and would not be entered as an exhibit. Their representative at that time further alleged as one of the reasons which induced them to make so vigorous a fight against our installing the Stirling alongside of theirs, that he considered the Stirling unsafe. If the Babcock & Wilcox Company, or any one else, can point to a single instance in which the Stirling boiler exploded resulting either in loss of life or injury to man or beast, we will pay \$2500 to any charity in the city of Chicago that they may designate.

THE STIRLING COMPANY.

CHICAGO, December 11, 1892.

The Duty on Charcoal Iron.

To the Editor: Referring to your leading article in last issue, page 1082, on the tariff on charcoal iron, we wish to call your attention to the fact that while heavy reductions in duty were made in the metal schedule of the tariff of 1883, and even in some cases in the McKinley bill of 1890, the duty on charcoal iron has remained virtually the same since the Morill bill of 1861. The duty then was fixed at \$22.40 per ton of 2240 pounds, or not less than 35 per cent. ad valorem, and in 1883 the duty was made \$22 per ton, only a reduction of 40 cents per ton, and the McKinley bill of 1890 fixed it "at not less than \$22 per ton."

We are not aware that any charcoal bar iron is made in this country, even with the present protection of about 70 per cent. ad valorem, and fail to understand what you mean by "the higher qualities of American materials, the market for which would be practically delivered over to the Swedish producer."

A. MILNE & Co.

NEW YORK, December 14, 1893.

To the Editor: Noticing your editorial comments on the duty on Swedish iron in your issue of the 14th inst., and your statement therein that £6. 10/ iron pays \$22 per ton duty under the existing law, would ask if you think it necessary for the welfare of the American iron manufacturers to be protected to the tune of over 70 per cent. on iron that does not enter into competition with them because of its superior quality, which thus far they have not been able to produce?

As this iron is essential for many manufacturers here in order to produce high quality goods, it would certainly seem to be an advantage for them to obtain, under a reasonable duty, material—which to them is raw material—that cannot be obtained at all from the domestic iron makers, and consequently no detriment to the latter.

BOSTON, December 15, 1893.

We did not intend to convey the impression that charcoal bar iron is being produced in this country. During the past few years American manufacturers of high grades of steel have succeeded in capturing a considerable share of the market once held by imported Swedish material. There is very serious danger that they lose not alone this, but that also the higher qualities of American special puddled iron will be crowded out.

PERSONAL.

Chauncey H. Andrews, for many years identified with the iron and steel interests of the Mahoning Valley and at present a large stockholder in several of the prominent manufacturing concerns at that place, is lying seriously ill at his residence in Youngstown, Ohio. His condition is so precarious that it has been deemed advisable to summon by telegraph a number of his near relatives living in Washington and New York.

Warren Delano, Jr., who has been connected with important anthracite coal interests and with the manufacture and use of fire brick, has been appointed vice-president of the Lackawanna Steel & Iron Company, with headquarters at 52 Wall street, New York.

Harry Parrock, formerly superintendent of the Upper Mill of the Union Iron & Steel Company, at Youngstown, Ohio, has been made general manager of the Pomeroy Mill, operated by the above concern. The position made vacant by Mr. Parrock has been given to John Bennington, who was formerly superintendent of the Warren Mill of the Union Iron & Steel Company, at Warren, Ohio.

L. B. Whitney has resigned his connection with A. Whitney & Sons of Philadelphia, manufacturers of car wheels, and associated himself with DeWitt W. Smith at 15 North Seventh street, in that city, where they jointly will look after the interests of the Liderwood Mfg. Company, the New York Safety Steam Power Company and the Erie City Iron Works Company.

John Jarrett, secretary of the Sheet Iron Manufacturers' Association, has been confined to his home at Pittsburgh, Pa., during the past ten days. His illness is not such as to cause alarm to his numerous friends.

OBITUARY.

ISAAC C. LEWIS.

Isaac C. Lewis, president of the Meriden Britannia Company, Meriden, Conn., died suddenly on the 7th inst. at his home, in that city. Apoplexy was the cause of his death. Mr. Lewis was born in Wallingford, Conn., October 19, 1812. In his fifteenth year he was apprenticed to Hiram Yale to learn the britannia ware trade at Wallingford. In 1834 Mr. Lewis formed a partnership with George Cowles under the title of Lewis & Cowles, and hired rooms in a factory in East Meriden for the manufacture of britannia metal goods. They remained here for about two years when they closed up business, Mr. Cowles going North and Mr. Lewis West. Mr. Lewis returned, however, soon after and commenced business again with the late Lemuel J. Curtis as a partner under the style of Lewis & Curtis. After about two years this partnership was dissolved. Shortly after this dissolution Mr. Lewis purchased a house and small farm and built a shop and put in a horse-power. Business increased to such an extent that a small engine was put in, but this proving insufficient Mr. Lewis bought the factory where he first commenced business with Mr. Cowles. He soon after associated with Daniel B. Wells, a former apprentice, under the name of I. C. Lewis & Co. Mr. Wells died soon after and Mr. Lewis bought his interest. In 1852 the Meriden Britannia Company was formed, with Mr. Lewis as president. He remained president of the company for about 12 years, when he declined to hold the office any longer. He still, however, remained a member of the company and took an active interest in the business. Upon the death of Horace C. Wilcox he was again elected president, and held the position until the time of his death. Mr. Lewis represented Meriden in the State Legislature in 1848, 1859, 1862 and 1866. He was also Mayor of Meriden for two years. Mr. Lewis was directly interested in many of the leading industries of Meriden. He was president of the Miller Bros. Cutlery Company, Chapman Mfg. Company and Meriden Trust & Safe Deposit Company, a director of the Meriden National Bank, trustee of the Meriden Savings Bank, and up

to six months ago a director in the Wilcox & White Organ Company. He was also interested as a stockholder in several other local enterprises, and had considerable money invested outside of Meriden. Mr. Lewis began life without a dollar, and by his own exertions accumulated a very large fortune. He never had a note protested, never sued any man, and never had a suit brought against him.

ARTHUR I. BEMIS.

Arthur I. Bemis, a long time resident of Springfield, Mass., and a member of the Bemis & Call Hardware and Tool Company of that city, died on the 2d inst. from the effects of a shock suffered a week previously. Mr. Bemis was born at Willimansett, January 18, 1835. When eight years old he removed with his parents to Springfield, where he spent the rest of his life. He received his education in the public schools and then entered the employ of his father in the coal and iron business. About 1860 Mr. Bemis was admitted a partner in the firm of S. C. Bemis & Co., and in 1868, when his father retired from active life, he with his brother, Thomas O. Bemis, and the late S. R. Phillips continued the business under the firm name of Bemis, Phillips & Co. When the present firm of Bemis & Collins was formed he retired permanently from the coal business. Of late years he had been actively identified with the business of the Bemis & Call Hardware and Tool Company, of which corporation he had been a director for 28 years. Mr. Bemis had been a trustee of the Hampden Savings Bank for a long term of years. Mr. Bemis was a man of genial disposition, with a quick sympathy which made for him a great many friends, to whom the news of his death will be a source of sincere sorrow.

CALVIN BRADFORD DOTY.

Calvin Bradford Doty died at his home in Steubenville, at the ripe age of eighty years, after having been practically an invalid and confined to his room for the past seven years. Mr. Doty was a pioneer nailer and iron manufacturer of that place. Mr. Doty was born in Wareham, Mass., December 11, 1813, and was descended from old New England ancestry. He learned his trade of nailing in Wareham, and early in life, as a young man, came with fellow workmen to Pittsburgh.

Later he came to Wheeling and with other nailers formed a company and built the Belmont mill. He sold his interest in this mill, and with 21 other workmen with whom he had been associated for several years formed a company and built the La Belle mill. Besides being an original stockholder, he also held a position in the mill. He was a director in the La Belle until several years ago, when the directorship passed into the hands of his son, Harry L. Doty. Mr. Doty removed to Steubenville about 35 years ago and became a stockholder and manager of the Jefferson mill. He retired from this position in 1885.

WILLIAM HOLMES.

William Holmes, for a number of years a member of the firm of the A. Garrison Foundry Company, at Pittsburgh, died suddenly in that city last week. Mr. Holmes was regarded as one of the best authorities on educational matters in Pittsburgh.

The condition of the car building industry has been strikingly revealed

through the placing of an order for 75 passenger cars for the Long Island Railroad. In spite of the efforts of Eastern works to secure it, the order was taken by the Pullman Company at a price which is said to be unparalleled.

Washington News.

(From our Special Correspondent.)

WASHINGTON, D. C., December 19, 1893.

The customs provisions of the new tariff bill, with the report of the majority, were submitted to the House today. The minority will follow with their report, which has been prepared by ex-Speaker Reed. No effort will be made to discuss the subject until after the holidays. The bill will then be taken up promptly and carried to a speedy finish under the parliamentary gag system which dominates necessarily under the rules of the House. It is expected that the party men claimed as opposed to the bill (some put the number as high as 40) will be increased by some additions after the Northern members of the majority get among their constituents and see the conditions as they exist at home and hear what employers and wage workers alike have to say.

A vote of 170 on an average attendance in the House would probably defeat the bill. Of this number the minority party might contribute 120 on a fair deal. This subject has been canvassed, but the Louisiana sugar men, for instance, ask the minority to vote with them to protect sugar, but are unwilling to reciprocate and vote for amendments which the minority want. The same one sided arrangements are talked about among the representatives of wool, lumber, iron ore and coal districts. If they make a combine and agree to support the amendments proposed by the minority they can count upon at least 120 minority votes to start with on their own plans.

A consensus of opinion in the House leads to the conclusion that the tariff bill practically as reported from the committee will pass that body, possibly before February 1. In the Senate the prospects are not quite so encouraging for an easy passage through that body.

It was announced in *The Iron Age* several weeks ago that the Senate Committee on Finance had taken up the House tariff bill informally and after some discussion the majority had decided to consider the measure as soon as it was in tangible shape and in anticipation of its transmission from the House. The committee have already commenced a preliminary review of its provisions and will take the bill up in more formal order now that the customs provisions have been finally determined. It is not anticipated that the measure will receive any material modifications in the lower House, although there is some agitation of an attempt to introduce revisions in Committee of the Whole.

There is a disposition on the part of the majority in the Senate Committee to give the manufacturers and wage workers an opportunity to state their views and to make modifications in accordance with a practical knowledge of the interests of industry aside from the question of revenue.

At a conference between the majority and the minority members of the Finance Committee, there was a partial understanding as to the programme which would be pursued in the consideration of the House bill. There

was then a disposition on the part of the minority not to enter into a protracted opposition, but simply to propose their amendments and have a fair discussion for the purpose of making a record, and then permitting the bill to come to a vote. If the majority proposed to pass it in the shape it would have assumed by that time to let them do so.

Very recently, however, the minority in the Senate, in view of the universal sentiment in the Northern States and a strong popular sentiment against it in Maryland, Virginia, West Virginia and Alabama, have decided on a different course. It is not improbable that Senators Sherman, Morrill, Aldrich, Allison, Jones and other leaders of the minority will pursue a different line of tactics based upon the sentiment of the people which they construe as a dependence to prevent the passage of the bill at all, or in any form at least which would not be satisfactory to the employers and the employed. The minority have the power to do this, and it is not likely, in the face of public sentiment, that a majority could be had to force a cloture.

Some of the minority Senators are now talking quietly among themselves of protracting the debate in the Senate, if necessary, into the Congressional campaign of next year in order to get the verdict of the people. If they fail to elect a House and Senate which will not be favorable to tariff revision to the extent proposed by the Wilson bill the measure will then be permitted to go through. If they render their verdict against the system of revision proposed it will be an easy matter to prevent the bill from going through in the short session.

The city for the past week has been full of manufacturers, who have come here to protest among the Northern Representatives in the majority against the rates established in the Wilson bill. They, as a rule, have had a cold reception among the Representatives, but in the Senate they have been promised an opportunity to present their views. Some of these gentlemen say that by the time the bill gets under way in the House the people throughout the Northern and some of the Southern States will be heard from in a way which will admit of no doubt as to their position.

It has been admitted to those gentlemen that organized action on the part of the wage workers would have more weight than from the employers, as the stock in trade of the small politician in favor of a revenue tariff has been an effort to prejudice the wage worker against his employer on the ground that the former gets a larger proportion of profit than the wage worker.

It was said of the campaign of 1892 that the wage workers would not "get under the same umbrella with the employer," and hence the result.

It is said that the election of 1892 represented national sentiment on tariff revision, and the elections of 1893, with their tremendous majorities in Massachusetts, New York, New Jersey, Pennsylvania and Ohio, not to speak of Nebraska and Montana, were due to local causes. Therefore the only convincing argument of the fallacy of this conclusion would be an emphatic expression of the views of the wage workers and masses of the people. In the absence of such a demonstration to support the minority movement in the Senate the leaders of that side will not feel justified in an attempt to prevent the passage of the bill unless very radically modified, to the exclusion of all other business.

MANUFACTURING.

Iron and Steel.

Stack No. 2 of the Dunbar Furnace Company, at Duubar, Pa., is now being shoveled out preparatory to being put in blast. As this furnace has been idle since August 1, 1892, it cannot be stated just now how soon the furnace will be ready for operations. It is stated on good authority that the plant of the Dunbar Furnace Company has recently changed hands, having been leased by a number of Philadelphia capitalists for a period of three years.

At the present time there are four furnaces in the Mahoning Valley in operation, these being Hubbard Furnace of Andrews & Hitchcock, Haselton of the Andrews Brothers' Company, Mary of the Ohio Iron & Steel Company, and Mattie of the Girard Iron Company, at Girard, Ohio.

The plant of Summers Brothers & Company, Struthers, Ohio, manufacturers of box annealed sheet iron and sheet steel, is in partial operation, the product being light steel sheets. Prospects for the continued operation of this plant for the winter months are reported as very bright. The continued excellent demand which this firm are receiving for their iron and steel sheets is due to the fact that they endeavor at all times to turn out product of the very best quality.

We are advised that the report that the plant of the United States Iron & Tin Plate Mfg. Company, Demmler, Pa., was entirely closed down is without foundation. While it is true that the plant is not being operated to full capacity, it is also a fact that at no time within the past three or four months have operations been entirely suspended. While the demand for sheets is very light at present this firm are doing a large business in tin and terne plate. As their tinning capacity is not large enough to consume their entire output of sheets it is necessary occasionally to run the sheet mills only half time.

The Cleveland Steel Company, Cleveland, Ohio, have been granted a charter of incorporation, with a capital stock of \$300,000. The incorporators are Frank Rockefeller, John A. Potter, L. H. Severance and S. A. Sague. This new concern will succeed to the business of the Britton Iron & Steel Company, at Cleveland, Ohio, manufacturers of steel and iron plate and black and galvanized sheets. At present the above plant is idle.

The plant of the W. Dewees Wood Company, at McKeesport, Pa., manufacturers of patent planished sheet iron, is in operation to nearly full capacity.

During the time the Lower Mill of the Union Iron & Steel Company, at Youngstown, Ohio, was idle, a number of improvements were made. Among them was the erection of a new Hazelton porcupine boiler on the 8 inch mill, two of the same type on the 10-inch mill, and a new engine on the 7-inch mill, also the addition of six new double puddling furnaces, equipped with Hazelton boilers.

On January 1, 1894, new wage scales will go into effect at the Homestead Steel Works, Homestead, Pa., Upper and Lower Mills, Pittsburgh and Beaver Falls Mills, Beaver Falls, Pa. It is understood that these new scales involve some heavy reductions in wages, especially to high priced men. At the Beaver Falls Mills it is stated that the new scale calls for reductions amounting to 40 per cent, for some classes of labor.

At Joliet, Ill., on the 9th inst., the sheriff took possession of the personal property of the Ashley Wire Company on a judgment of \$11,090 in favor of John Y. Brooks. The Ashley Wire Company gave a mortgage of \$67,246.24 last July to the Illinois Steel Company. Their mill has been closed down since June. The plant is a very good one and quite new, having been built within the past two or three years, since the company removed their machinery from the Joliet penitentiary. They were drawers of wire and manufacturers of barb wire.

James Stevens of the Merchant Iron Mill, Rome, N. Y., states that the works will continue to run as during several months past on half time as long as there are sufficient orders to give the men work.

A number of sheet mills in the plant of the Moorhead-McCleane Company, at Pittsburgh, which have been idle for some time, have again been put in operation.

No. 2 furnace of the Sloss Iron & Steel Company, at Birmingham, Ala., produced

during one week recently 1204 tons. All of this was foundry except 61 tons. The best previous week's record averaged 140 tons per day.

The Elwood Steel Company of Elwood, Pa., have made an assignment, on account of a disagreement among the stockholders. Liabilities, \$25,000; nominal assets, \$125,000.

The Slatington Rolling Mill, at Slatington, Pa., has resumed.

The statement that the Passaic Rolling Mill, at Paterson, N. J., has closed for an indefinite period is untrue.

The two furnaces of the Shelby Iron Company, at Shelby, Ala., which have been out of blast since October 4 last, are being relined, with the object of being in position to take advantage of any improvement in the near future in the demand for car wheel iron. The company have a full force at work raising ore.

The schedules of Fuller Brothers & Co., iron commission merchants, at 139 Greenwich street, New York, who failed on August 8, show liabilities of \$585,802, of which \$59,779 are contingent; nominal assets, \$625,931; actual assets, \$287,422. Of the latter only about \$140,000 will probably come into the assignee's hands, as \$150,000 of the assets were hypothecated previous to the assignment to secure debts exceeding that sum. The principal creditors are C. A. Godcharles Company, Milton, Pa., \$68,317; Post & Flagg, \$4,173; W. H. Godcharles & Co., Towanda, Pa., \$31,331; Apollo Iron & Steel Company, Pittsburgh, \$45,701; Frederick Sturges, \$63,431; Oliver & Roberts Wire Company, Pittsburgh, \$25,500; Dover Iron Company, \$15,000; Merchants Exchange National Bank, \$33,500; Fuller, Lord & Co., \$18,279; estate of Mary B. Fuller, \$15,363; estate of Dudley B. Fuller, \$23,819. Some of the creditors are secured.

The Radford Pipe & Foundry Company, whose works are at Radford, Va., have been running steadily for several months past, and are now pushing production to their utmost capacity. They report having taken several sizable contracts of late, and that prospects are excellent for a large tonnage in pipe business next year. The ready sale of municipal bonds tends to encourage water works improvements, some of which have been contemplated for years but laid aside because of difficulty in financing securities.

The Haselton Furnace of the Andrews Brothers Company of Youngstown, Ohio, is reported by the owners to be doing better work than ever before. It is making an average of 175 tons daily, principally Nos. 1 and 2 foundry.

The Muncie Muck Bar Iron Company, now operating the old nail works plant at Muncie, Ind., are turning out 25 tons of muck bars daily.

The stockholders of the Joliet Sheet Rolling Mill Company, at Joliet, Ill., have elected the following Board of Directors: M. Calmer, F. W. Werner, L. F. Beach, Dr. Duncan, L. J. Sehring, D. Rosenheim, C. E. Woodruff. Mr. Woodruff, named in this list, is a well-known Chicago hardware merchant. It is expected that arrangements will be shortly made for a resumption of work. The mill has been idle for months.

A report that the East Chicago Iron & Steel Company of East Chicago, Ind., intended to erect a new 18-inch train of rolls has been widely published. There is not a word of truth in this statement, which has caused the company much annoyance. The report that the Illinois Steel Company are going to erect a new merchant mill at Bay View is also emphatically denied by Superintendent Otjen.

No. 1 Colebrook Furnace of Robert H. Coleman, Lebanon, Pa., has resumed operations under the direction of the assignees after four months of enforced idleness.

The rolling mill at Burlington, Iowa, is to be moved to a city still further West. Youngstown papers state that B. M. Campbell, Harry G. Hamilton and Morgan Evans of that city have gone West to negotiate the deal and that it will probably go to Seattle, Wash. The controlling interest in the Burlington mill is owned by Richard Brown. Judge Wilson and J. F. Holcomb formerly owned stock in the concern. Harry G. Hamilton, now assisting in engineering the deal, was formerly general superintendent.

The embarrassment of a large Lehigh Valley furnace company, to which brief allusion was made in *The Iron Age*, has since culminated in the failure of the Crane Iron Company of Catasauqua, Robert F.

Kennedy of Philadelphia, and Leonard Peckitt, superintendent, being appointed receivers. The failure to pay the interest due on the bonds and other obligations of the company on November 1 is what brought on the climax. The total bonded indebtedness at this time was reported to be \$700,000. The funded debt consisted of first mortgage sixes, \$925,000, due May 1, 1900, of which \$448,000 are outstanding, the company having bought in the balance. There are also \$350,000 of bonds hypothecated for loans. The company, who were formed in 1891, operated four furnaces at Catasauqua, and leased the Macungie Furnace. In 1891 the total amount of iron made was 89,003 tons, and during 1892 this was increased to 114,955 tons.

The two Lucy furnaces, at Pittsburgh, which have been idle for about four months, resumed operations on Monday morning, the 18th inst. These two stacks are 85 x 20 feet, and have a combined weekly capacity of about 4000 tons.

The Wheeling Steel Works of the Wheeling Steel & Iron Company, Wheeling, W. Va., have been idle since last July. During the shut down extensive repairs and improvements were made to the plant, and as these have been completed the firm are now in position to put the plant in operation again as soon as the condition of trade warrants. The wage scale under which these works are operated does not expire until January 1, 1894, but the firm have already been notified by their employees that they will return to work and agree to accept the same reductions in wages granted in other Bessemer steel plants in the Ohio Valley. It will be remembered that the new wage scales adopted by the different steel concerns in the Wheeling district called for a reduction of about 33 per cent.

The receiver's sale of the effects of the American Steel Wheel Company, advertised for December 13, was adjourned to January 10. The sale will take place at Norwood, N. J.

The nut and bolt works of J. H. Sternberg & Sons, Reading, Pa., will work ten hours a day hereafter, instead of eight, as has been done for some time past.

From Pueblo, Col., comes the announcement that the steel works of the Colorado Fuel & Iron Company will open up in all departments early in January. It is stated that the orders for rails now booked will keep the plant running for some months to come.

A special meeting of the stockholders of the Bethlehem Iron Company, Bethlehem, Pa., will be held on February 14, 1894, for the purpose of voting on a proposition to increase the capital stock of the concern from \$5,000,000 to \$10,000,000.

At Pittsburgh the Carnegie Steel Company, Limited, have filed a bill in equity against W. V. McCracken and William Semple, Jr., doing business as McCracken & Semple, the Pittsburgh, Akron & Western Railroad Company, and W. A. Lynch, receiver of the railroad company. On July 29, 1893, it is stated, McCracken made a promissory note for \$70,000, payable on demand, to the Pittsburgh, Akron & Western Railroad Company, and it was indorsed by the railroad company to the Carnegie Steel Company, Limited. There were also deposited in the hands of the steel company as collateral security for the payment of the note 160 \$1000 first mortgage 5 per cent. gold bonds of the railroad company. In September demand was made for the payment of the note, but it was refused and the note was protested. The plaintiff asks for a decree authorizing the sale of the bonds, and that the plaintiff may be authorized to purchase and hold the bonds free of any claim of any of the defendants.

The new Bessemer Steel plant of the National Tube Works Company, at McKeesport, Pa., built by the Pittsburgh Iron & Steel Engineering Company of Pittsburgh and illustrated in *The Iron Age* of November 16, was put in partial operation last week. So far the operations of this plant have been entirely satisfactory to all concerned.

The order recently issued for the closing down of the entire plant of the Pennsylvania Steel Company, at Steelton, Pa., from December 23 to February 1, has been countermanded and operations will be continued until January 1 and perhaps longer. Enough orders have been received to keep the works running until the first of the year, and if additional orders are received the plant will be kept running until these are filled.

The Lloyd Booth Company, Youngstown, Ohio, are now building one of the largest and most complete blooming mills in the country for the new Bessemer plant of the Ohio Steel Company at that place. The mill will be of the reversing type, and was designed by Julian Kennedy of Pittsburgh, who is consulting engineer of the Ohio Steel Company. The rolls and pinions are made of cast steel, and the pinions are 35 inches in diameter on the pitch line. The housings are very heavy, weighing about 19 tons each. The screwing down gear for raising and lowering the top roll will be manipulated by electricity. The roll tables for handling the blooms are also being built by the Lloyd Booth Company, and will be about 35 feet long, each table having 26 driving rolls. These will also be operated by electric power.

Last week notice was given by the New Castle Wire Nail Company, New Castle, Pa., to the effect that the wire nail and rod mills of that concern would be run on single turn until further notice.

The H. W. Minnemeyer Mfg. Company of Allegheny, Pa., have been granted a charter of incorporation, with a capital stock of \$25,000. The incorporators are Henry W. Minnemeyer, C. E. Wolff and Paul C. Wolff, all of Allegheny, Pa.

Last week the Edgar Thomson Steel Works, Bessemer, Pa., were running on steel billets, but on Monday morning, the 18th inst., the manufacture of rails was resumed.

The South or old Scranton mill of the Lackawanna Steel & Iron Company of Scranton, Pa., started double turn yesterday, being the only rail mill in the country which is running double turn. Work will begin first on the 15,000-ton order for the Boston & Albany Railroad. Wages of all the tonnage hands have been reduced from 10 to 35 per cent. Orders have also been given to start two of the four idle furnaces of the works, one furnace having been running all along.

Sylvester & Co., Somerville Spike Works, whose office is at 8 Oliver street, Boston, advise us that they have purchased the interest of the late Arthur G. Thompsons in the Danvers Iron Works, Danversport, Mass., and shall continue to operate it in connection with their works at Somerville, Mass., as soon as the necessary repairs and alterations can be made.

Machinery.

The Westinghouse Air Brake Company of Pittsburgh, with works at Wilmerding, Pa., have declared the regular quarterly dividend of 5 per cent.

The National Water Tube Boiler Company of New Brunswick, N. J., have sold their plant of 1500 horse-power boilers, which they had at the World's Columbian Exposition, to the Ohio Steel Company, Youngstown, Ohio.

The property of the Auburn Stove Foundry Company, at Auburn, Maine, has been damaged by fire to the extent of \$4,000.

The foundry plant of Baker & Shevlin, Saratoga Springs, N. Y., is at present rushed with machinery and devices for the big paper mill, owned by George West in that section of the State.

The Penn Elevator Engineering Company is the name of a new concern applying for a charter of incorporation under the laws of Pennsylvania. The company are erecting at Bloomsburg, Columbia County, Pa., a two story brick factory building, 50 x 200 feet, which they will equip with machinery of the latest and most improved design suitable for building elevators of all kinds. The ground floor will contain the machine shop and wood working department, and the upper floor will be devoted to paint and pattern shops, drafting and office rooms. The factory is conveniently situated near three railroads, viz.: Philadelphia & Reading Railroad, Pennsylvania Railroad, and Delaware, Lackawanna & Western Railroad, a switch from the latter road entering the company's yard. Facilities for transit by water are also afforded by means of the Pennsylvania Canal, running to Baltimore. The officers of the company are George R. Stevens, president; John P. Casey, vice-president, and D. S. Cann, secretary. The two former were lately with Morse, Williams & Co. of Philadelphia, and the latter is a member of the firm of Cann & Saul, steel merchants, Philadelphia.

The Hercules Ice Machine Company are now running the Hercules Iron Works plant at Aurora, Ill. The Hercules Iron Works made an assignment July 10 last,

owing to the entire loss of the Cold Storage Building located at Jackson Park, the amount of loss being in the neighborhood of \$500,000. The assets of the company have been purchased by the Hercules Ice Machine Company, a new corporation organized for that purpose, having a capital of \$500,000. Since the reorganization, about two months since, the company have contracted for about \$100,000 worth of work, their business now being the manufacture of ice and refrigerating machines. They employ in ordinary times from 160 to 200 hands, and their machines are shipped to all parts of the Union and to foreign countries. The Hercules Iron Works shipped during the past year machines to Costa Rica and Cuba. The buildings of the various departments are arranged to be extended without any inconvenience, as none of the structures are now equal in extent to the original designs. The plant has a very excellent equipment of tools especially suited for the business, and the entire material used in the construction of the machines is made within their own works, except portions of the steam engine, which are purchased from the E. P. Allis Company of Milwaukee.

Plimpton & Son's foundry and machine shops, at Clearfield, Pa., have been burned at a loss of \$5000.

About a year ago Cooperstown, N. Y., capitalists invested about \$10,000 in the Maddox Wire Belting Company, the plant of which was removed from Massachusetts. The plant is now closed and is to be sold on a judgment for \$400.

Eleven molders employed in the foundry department of Klotz & Kromer's machine shops, at Sandusky, Ohio, have quit work on account of a reduction in wages.

The Rand Drill Company's plant, at Tarrytown, N. Y., has resumed operations on full time.

The Frech Machine Company, manufacturers of metal working machinery, at 76 West Van Buren street, Chicago, made an assignment on the 9th inst. in favor of Hugo Pam, as assignee. Assets are scheduled at \$5000 and liabilities \$4000. The company attribute the failure to their inability to raise funds to meet the claims of several pressing creditors. The assets of the concern are not readily convertible into cash, as they consist largely of valuable patents and machinery.

E. C. Wehrfritz is building a machine shop at Little Rock, Ark.

The Nameless Iron Works of Shakopee, Minn., have begun the manufacture of a new machine called the one-roller disintegrator, to prepare clay for brick machines. It is estimated that it will feed enough clay to supply a machine manufacturing 100,000 brick in ten hours, preparing the clay from the bank for the brick machine to make a first class brick. The clay is not squeezed through rollers as is the case where two rollers are used, but is shaved.

The Reading Foundry, Reading, Pa., has closed down on account of a lack of orders.

The American Well Works, at Aurora, Ill., have just completed a new boiler plant for their own use, in which they have embodied a number of original features which secure very great economy. They are large manufacturers of boilers as well as of engines to be used with their well sinking machinery.

The J. M. Carpenter Tap & Die Company of Pawtucket, R. I., are now preparing a new line of stocks, taps and dies intended specially for bicycle work. These will be ready January 1 and will be of the same high grade as those now made by this company.

The Phosphor-Bronze Smelting Company, Limited, of Philadelphia, are removing their offices to their new foundry and smelting works at 220 Washington avenue, in that city.

Maris & Beekley of 2343 Callowhill street, Philadelphia, have furnished two of their traveling cranes—10 tons and 5 tons capacity, respectively—to the New Jersey and Pennsylvania Concentrating Works, Edison, N. J.

The January dividend disbursements of five of the Westinghouse interests at Pittsburgh amounted to \$508,500. This amount was distributed as follows: Westinghouse Air Brake Company, \$250,000; Philadelphia Natural Gas Company, \$112,500; Westinghouse Electric & Mfg. Company, preferred stock, \$125,000; Union Switch & Signal Company, preferred stock, \$6000; Standard Underground Cable Company,

\$15,000. It is stated that the business of the Westinghouse Electric & Mfg. Company for November slightly exceeded \$500,000. Two thousand men are now on the pay rolls of the concern and are working full time.

A reduction of 15 per cent. in the wages of the employees of the foundry of the Allentown Rolling Mill, Allentown, Pa., has been made.

The Cleveland Machine Screw Company, Cleveland, Ohio, have sustained a loss of \$10,000 by fire.

Hardware.

The Granite Filter Company have been incorporated at St. Louis, Mo. The capital is \$20,000, \$10,000 paid in. The incorporators are A. L. Emery, O. H. Winegar and Edward Morrison. The company will manufacture a filter invented by Mr. Emery.

The American Shear Company, Hotchkissville, Conn., manufacturers of shears and pocket knives, have shut down for the present.

The J. A. Wright Company of Keene, N. H., have been incorporated. They will manufacture polish. The capital stock is fixed at \$30,000.

The striking molders of the Penn Hardware Company, Reading, Pa., held a meeting on the 12th inst., and decided not to return to work. They struck last August.

At a meeting of the National Cutlery Company, held in Rockford, Ill., on the 12th inst., Justin W. Meehan of Chicago was elected chairman and George B. Kelley of Rockford secretary. The necessary papers for incorporation have been forwarded to the Secretary of State. The capital stock of the new company is \$75,000, all of which has been subscribed. The company will probably locate in Rockford, but if not will build their plant in Chicago.

The H. P. Nail Company, Cleveland, Ohio, have decided to shut down their works. Already some 200 or 300 men have been discharged, and in the course of the next few days all of the 700 men employed by the company will be thrown out of work. The shut down is attributed by the company to a lack of orders.

Des Moines Scale & Wire Works, Des Moines, Iowa, advise us that trade this fall, considering the depression of general business, has been very satisfactory. They manufacture wagon, track and hopper scales.

Cleveland Twist Drill Company, Cleveland, Ohio, expect to close down their factory for the holidays. This is their usual custom and they take advantage of the opportunity to take their inventory and do such general repairs as are necessary. At the present time they are running their factory full time but with a reduced number of hands. The company have a large stock of goods on hand, so that they will be able to fill all orders promptly during the time in which the factory is closed.

Walter W. Woodruff & Sons, Mount Carmel, Conn., manufacturers of coach and carriage hardware, are making a specialty of fine malleable iron castings from owners' patterns. Only best work will be done, and for this, it is claimed, their facilities are particularly well adapted.

Mobile papers state that J. J. Simmons of St. Louis, manufacturer of the Jewel refrigerator, is making arrangements for the transfer of his manufacturing operations to Mobile.

The Harry Svensgaard Bicycle Company of Fergus Falls, Minn., are in the hands of a receiver to close out the business. We are advised that there is a good bicycling opening in that part of the West, and that there will undoubtedly be a well selected stock of wheels and a complete bicycle outfit thrown on the market early in the spring at a very low rate. The business has been extensively advertised, and is known in the Dakotas, Montana, Iowa and Wisconsin.

Anglo-American Iron & Metal Company, 213 Pearl street, New York, have issued a circular in which reference is made to the reports which have been circulating in the trade to the effect that they are not in a position to promptly fill orders for cycle material. These reports they contradict most emphatically and intimate that they are energetically pushing their business.

The Lawrence Barbed Wire Factory is one of the manufacturing institutions in Kansas that has no occasion to complain of dull times, says the Lawrence Gazette. The wire drawing mill runs until 10 p.m., draw-

ing enough wire to supply the barbed wire mill running at full capacity day and night. Even with their largely increased plant, operated to its limit, they are unable to keep up with their orders. More room and more machinery are to be added within 60 days. The company recently began making bale ties and their business in this one item has grown beyond all expectations.

Wyeth Hardware & Mfg. Company, St. Joseph, Mo., advise us that while their business has suffered during the year on account of the general depression all over the country, they have recently completed and will by January 1 be settled in their new six story building, located at 609 to 621 North Second street in that city. This building has been specially arranged for the hardware business, and is fitted with the latest improved appliances. Electric light and steam plants have been put in. Side tracks and switches will be laid which will accommodate 40 cars. There are tracks in the building by which three cars can be loaded at one time. The company state that in their hardware and cutlery departments they will send out 25 traveling representatives about January 1. They will also send out 10 men to represent their saddlery department.

A correspondent at Akron, Ohio, mentions that about 90 per cent. of the manufacturing establishments in that city will start up on or about January 1, thus giving employment to a majority of the working-men who have been idle for nearly six months. These establishments are those mainly of manufacturers of agricultural implements, most of whom look forward to increasing their output considerably.

Miscellaneous.

The Reading Traction Company, at Reading, Pa., have placed the order for their new car house with the Berlin Iron Bridge Company of East Berlin, Conn. The side walls will be of brick, the roof of iron. The building will be 85 feet in width and 180 feet in length. The width is divided into two parts of $42\frac{1}{2}$ feet each, a row of columns supporting trusses at the center.

The Heath Rail Joint Company of Superior, Wis., have secured an order for 14,000 joints, and have several other good sized orders in sight. Recent changes made in the machinery have economized the cost of production, so that the company now find themselves in a most prosperous condition.

The report that a cut of from 20 to 39 per cent. had been made in the wages of the employees of the Pullman Works, at Wilmington, Del., is denied by the superintendent. On the other hand, the wages of some of the men have been increased, while the force is being increased by 300 additional hands, bringing the number of employees up to 600 men.

Among recently authorized corporations in Illinois are the following: Cumming Foundry Company, Chicago; capital stock, \$100,000; incorporators, Oscar Ludwig, R. D. Wardwell, William S. Cumming. Loretto Iron Company, Chicago; to mine iron ore; capital stock, \$400,000; incorporators, Thomas J. Callinan, William H. O'Brien and Morris St. Paul Thomas. Fuller Incandescent Heat & Light Company, at Chicago; capital stock, \$1,000,000; incorporators, J. T. Kretzinger, C. E. V. Akerberg, M. F. Gallagher. Barnes Car Company, at East St. Louis; capital stock, \$1,000,000; incorporators, Adiel Sherwood, Joseph B. O'Connor, Charles Voyce. Keystone Cash Register Company, Chicago; capital stock, \$250,000; incorporators, Charles F. Ansell, J. D. Sperry, Fred Kubec. Universal Electric Heat & Light Company, Chicago; capital stock, \$100,000; J. T. Kretzinger, C. E. V. Akerberg, M. F. Gallagher. Turney Electric Mfg. Company, Chicago; capital stock, \$75,000; incorporators, Eugene T. Turney, Walter H. Crowder and William E. Mason.

The Gilbert Car Works, at Troy, N. Y., have shut down.

The Wilbur F. Washburn Brass & Iron Works, at Yonkers, N. Y., have temporarily suspended. Insufficient capital and slow collections were the cause.

The business of C. Aultman & Co., manufacturers of engines, threshers and other farming implements, at Canton, Ohio, has gone into the hands of receivers. The company are said to be solvent, as their assets are not far from \$2,700,000, while their liabilities are about \$1,000,000.

The Philadelphia Natural Gas Company of Pittsburgh have declared the regular quarterly dividend of $1\frac{1}{2}$ per cent.

TRADE REPORT

Deeper gloom is settling down on the Iron trade, and there are few crumbs of comfort for those engaged in this great industry. Pittsburgh and its adjacent districts are enjoying the melancholy distinction of crowding competing sections to the wall and threaten, with a further lowering of wages at some of the mills, to drag the level of prices even lower. In Eastern Pennsylvania the Iron manufacturers have been appealing quite successfully to their local financial institutions to withdraw accommodations from the Western rivals, and consumers throughout the Eastern territory are being plied with arguments to show them the danger of delivering themselves into the hands of distant producers.

It is really only one branch in which the widely heralded Eastern campaign of a Pittsburgh concern has been signally unsuccessful, and that is in the Steel Rail trade. The fruit of this victory by the Eastern competitor is the starting double turn on the part of the Lackawanna mill, with a heavy tonnage of orders on hand. The Colorado mill has captured an order for 26,000 for the Union Pacific Company at a price which, its officers state, leaves some profit. They intimate that they are figuring on other work too.

In Pig Iron the general markets are very dull so far as Foundry grades are concerned. The attitude of the Southern producers will not be thoroughly tested until some of the larger Cast Iron Pipe contracts come into the market which are now under negotiation. Among them it may be interesting to mention one for 8000 tons for Mexico. From Philadelphia comes the significant news that capitalists close to the iron trade have bought considerable quantities of Pig Iron for investment. It is not believed that the holdings of the Crane Company, which are to be sold, are large enough to create a lasting impression.

In Pittsburgh Gray Forge has dropped to \$10, while Bessemer Pig has sold at \$10.75.

Steel Billets are squarely down to \$16.50 at Pittsburgh, and are correspondingly weak in the East. Wire Rods, for which the off season has come, are offered at \$24 at Western mills. In connection with the Wire trade it may be mentioned that the 25,000 keg order for Wire Nails for the Standard Oil Company was captured by a local mill. Every important concern in the country fought for the contract. In the structural trade a moderate amount of work is coming up. A battle royal will probably be fought next month at Chicago for the elevated work which will be given out there. The demoralization in prices for all rolling mill products continues.

Philadelphia.

Office of *The Iron Age*, 230 South Fourth St.,
PHILADELPHIA, Pa., December 19, 1893.

The situation as regards Iron and Steel in this vicinity is in a most unsatisfactory condition, and unfortunately there is not much prospect of any immediate improvement. Steel has supplanted Iron to such an extent that the latter is almost totally ignored at most of the large mills, and as the West claims to be making Steel at a much lower cost than can be done here, the bulk of the business is taken by mills west of the Alleghenies. It is also a fact that Bessemer Pig is being shipped from Pittsburgh to this market, and if things go on as they have been doing during the past six months there will be very little left for either mills or furnaces hereabouts. These conditions are probably only temporary, but in the meanwhile they are terribly trying, especially as no definite opinion can be formed as to the time or the manner in which relief will be found. There are all sorts of theories, but the one generally accepted is that the business is being done at a loss and sometimes from financial necessity rather than as ordinary business operations. Be that as it may, manufacturers of the highest standing, and with plants equipped with all modern improvements, say they cannot come anywhere near the prices quoted from Pittsburgh, and will cease operations rather than attempt to meet competition of that character. What may be done after the turn of the year nobody seems to know, but for 1893 business is practically at an end, and with less work in hand than at any time within many years, probably not since 1873, and perhaps not then.

Pig Iron.—Business could hardly be duller than it has been during the past week, but neither buyer nor seller seems to care much about it. Consumers have no desire to load up under present conditions, neither are producers inclined to enter many orders at such prices as the market would at this time afford. Consumers have an idea that there is a possibility of prices being lower, while there is no immediate probability of them being higher. Producers are satisfied that they cannot continue in business if further concessions are required, neither are they willing to tie themselves to heavy engagements at current market rates, the natural outcome being a "stand off" on both sides. Taking an outside view of the situation, it would be hard to suggest any course other than that adopted by both of these interests. The chances are that things will drift along for some time without any material change in prices, although considering the increase in production and the almost total suspension of consumption during the next two or three weeks, prices may go a little lower before there is anything like liberal buying. Ultimately there can be no question as to the course of the market, but how long before the turning point is reached is something no one can foresee. It is significant, however, that some heavy speculative purchases are being made by capitalists who are closely identified with the trade. Money has been quietly invested wherever it was most needed and wherever prices were made attractive. Doubtless the figures were very low, but the Iron was bought as a speculation, and would not have been bought unless special inducements were offered. These, with purchases made some two or three weeks ago by legiti-

mate consumers, have relieved the market temporarily, so that while there is more Iron being made, pressure to sell is as yet no greater than it has been all along. General quotations for Philadelphia deliveries are about as follows:

No. 1 Foundry	\$13.75 @ \$14.25
No. 2 Foundry	13.00 @ 13.25
Standard Gray Forge.....	11.75 @ 12.25
Ordinary Gray Forge	11.25 @ 11.50

Steel Billets.—Demand very light, although prices are lower to-day than ever. Good buyers could place orders at \$19 @ \$19.25, delivered, for 1000 ton lots, but current requirements are very small, and chiefly for small lots, 50 to 100 tons, and sometimes 200 to 300, at prices varying from \$19.50 to \$19.75, delivered. The feeling is very weak, however, and lower prices are confidently expected before any large amount of business can be secured.

Finished Material.—Small lots are in pretty good demand, but large orders are not in the market at present. Most of the mills will shut down at the end of the week, and are not likely to start up until after the turn of the year, although in the meanwhile there is very little inquiry for any but immediate deliveries, so that there is nothing definite in regard to the amount of work likely to come out after the holidays. The outlook is unfortunately far from encouraging, and it is to be feared that the depression will extend further than people are inclined to expect, as there is nothing in sight that will be likely to bring immediate relief. Prices are at the very lowest point yet reached, and on bids for good sized lots there is little doubt that orders could be placed at still further concessions. Nominal quotations are about as follows:

Grooved Skelp, delivered.....	1.40¢ @ 1.45¢
Best Refined Bars.....	1.40¢ @ 1.45¢
At interior points.....	1.30¢ @ 1.35¢
Tank Steel.....	1.45¢ @ 1.55¢
Heavy Plates.....	1.50¢ @ 1.60¢
Shell.....	1.60¢ @ 1.75¢
Flange.....	1.90¢ @ 2.00¢
Angles.....	1.60¢ @ 1.70¢
Beams and Channels	1.65¢ @ 1.80¢

Old Material.—Market dull and lower. There is no demand of any account, and as holders are inclined to realize, purchases can be made at extremely low figures—so low, indeed, that they sometimes are hardly enough to pay freight and handling. General quotations are about as follows:

No. 1 Wrought Scrap, delivered.....	\$11.50 @ \$12.00
Machinery Cast, delivered.....	10.00 @ 11.00
Heavy Steel Scrap, delivered.....	11.00 @ 12.00
Old Iron Rails, delivered.....	14.00 @ 14.50
Old Street Rails, delivered.....	15.00 @ 16.00
Wrought Turnings, delivered.....	9.50 @ 10.00
Cast Borings, delivered.....	6.50 @ 7.00

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts., CINCINNATI, December 20, 1893.

Business in Pig Iron during the week ending to-night has been in the main confined to filling small orders from the jobbing foundries in this district, which only in a few instances reached as high as 500 tons. There was no large demand either for spot or forward delivery, but there were moderate sales of No. 2 Foundry Coke Iron at \$7.90 @ \$8 per ton, f.o.b. Birmingham, which is a decline of 25¢ @ 35¢ per ton from the prices obtained two or three weeks ago. There were moderate orders from the East for various kind of Iron, yet none of them were large, and the aggregate

sales of all kinds were not important, but were larger than in any week in the recent dull times. The pending of tariff revision tends to restrict purchases of Pig Iron, and there appears to be an undertone of confidence that there must be a pretty fair consumptive demand when the rates are once settled, if they are not made so low as to destroy our home industries, and it is surely not probable that the dominant party will carry the matter so far as that. Quotations are as follows:

Foundry.

Southern Coke, No. 1.....	\$12.25 @ \$12.50
Southern Coke, No. 2.....	10.75 @ 11.00
Southern Coke, No. 3.....	10.50 @ 10.75
Ohio Soft Stone Coal, No. 1.....	15.50 @ 16.00
Ohio Soft Stone Coal, No. 2.....	14.50 @ 14.75
Lake Superior Coke, No. 1.....	15.00 @ 15.25
Hanging Rock Charcoal, No. 1.....	18.50 @ 19.00
Hanging Rock Charcoal, No. 2.....	17.50 @ 18.00
Tennessee Charcoal, No. 1.....	14.00 @ 14.25
Tennessee Charcoal, No. 2.....	13.00 @ 13.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	17.75 @ 18.00
Lake Superior Car Wheel and Malleable.....	17.00 @ 17.25

Forge.

Gray Forge.....	10.00 @ 10.50
Mottled Coke.....	9.75 @ 10.00

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, December 20, 1893.

Pig Iron.—Trade in all kinds of Coke Iron is quiet, but there are indications that after the new year opens a number of concerns will be in the market for a considerable quantity of Iron. Consumers are now exceedingly careful not to take any more stock than is absolutely necessary to meet their requirements. Orders for single carloads in almost every case name definite quantities, which are not to be exceeded. Quotations at present are purely nominal and indicate the prices asked for small lots only, and they can be shaded materially on round lots. Offers are being made of Iron from second hands or from the stock of bankrupt foundries at very low rates. Transactions in Lake Superior Charcoal have been a little more frequent. Several lots were sold the past week to malleable companies for immediate shipment at a slight concession for spot cash. Quotations are now as follows for cash:

Lake Superior Charcoal.....	\$15.50 @ \$16.00
Local Coke Foundry, No. 1.....	13.50 @ 14.00
Local Coke Foundry, No. 2.....	12.75 @ 13.00
Local Coke Foundry, No. 3.....	12.25 @ 12.75
Local Scotch.....	14.00 @ 14.50
Ohio Strong Softeners No. 1.....	15.50 @ 18.00
Southern Silvery, No. 1.....	13.75 @ 13.75
Southern Silvery, No. 2.....	13.25 @ 13.25
Southern Coke, No. 2.....	12.15 @ 12.40
Southern Coke, No. 3.....	11.65 @ 11.90
Southern, No. 1, Soft.....	12.40 @ 12.65
Southern, No. 2, Soft.....	11.65 @ 11.90
Tennessee Charcoal, No. 1.....	16.00 @ 16.50
Southern Gray Forge.....	10.60 @ 10.85
Alabama Car Wheel.....	18.25 @ 18.50
Jackson County Silvery.....	16.00 @ 16.50
Other Ohio Silvery.....	15.00 @ 15.30

Bars.—The Bar trade is disappointed in the condition of the car industry. The car orders so far placed have not brought out any business in car specifications for Bars. General trade is fair, but prices are weak and the bottom has apparently not been struck. New mills further West are demoralizing the market by selling at lower than Chicago prices. Soft Steel is also crowding Bar Iron and manufacturers are in some cases offering Iron and Steel at the same price and with the same scale of extras. Quotations on mill shipments are now 1.30¢ @ 1.35¢, Chicago, half extras, for Sut Steel Jobbers are selling moderate quantities from stock

with prices ranging from 1.55¢ to 1.65¢ according to quantity.

Structural Material.—It is reported that the Milwaukee viaduct has been awarded to the Detroit Bridge & Iron Works, in which case, it is said, the material will be furnished by the Cleveland Mill Company. The Beam market is quiet, but considerable figuring is being done on building projects, which are mainly located outside of the city. An important extension of the Lake street elevated is expected to be ready for bids in January. Quotations are as follows, Chicago delivery: Beams 1.65¢ @ 1.75¢; Tees, 1.90¢ @ 2¢; Angles and Universal Plates, 1.60¢ @ 1.65¢. Small lots are sold from stock at an advance of 10¢ @ 15¢ per 100 above these prices.

Plates.—A slightly better movement is reported both for mill orders and in small lots from stock. The better makers are picking up more business, and prospects are a trifle brighter in this line. Mill shipments, Chicago delivery, are quoted as follows: Tank Steel, 1.60¢ @ 1.70¢; Shell Steel, 1.80¢ @ 1.90¢; Flange Steel, 2¢ @ 2.10¢; Fire Box, 2.75¢ @ 5¢. Store prices now prevail as follows: Iron or Steel Sheets, Nos. 10 to 14, 2¢ @ 2.10¢; Tank Steel, 1.90¢ @ 2¢; Shell Steel, 2 20¢ @ 2.40¢; Flange Steel, 2 50¢ @ 2.65¢; Boiler Tubes, 70 and 5% off.

Sheets.—Very little business is doing in Black Sheets, but some inquiries are reported for shipment during the early months of the coming year. Prices remain as before at 2.65¢ @ 2.70¢, Chicago, for mill shipments of No. 27 Common, with small lots from stock selling at 2.90¢ @ 3¢. An improved tone is noted in mill business in Galvanized Iron. Prices, however, are unchanged and mill shipments of Junita are quoted at 70 and 10 and 10% and with small lots at 70 and 5% @ 70 and 10%. Good transactions have taken place in Sheets with prices ranging from 25% to 30% off, according to quantity.

Merchant Steel.—While new business is light, as usual at this season of the year, specifications are going forward rather freely to the mills on season contracts. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery, Tire and Open Hearth Spring Steel, 1.90¢ @ 2¢; Ordinary Bessemer Machinery, 1.60¢ @ 1.65¢; Ordinary Bessemer Tire, 1.55¢ @ 1.60¢; Ordinary Tool Steel, 6¢ @ 7¢; Specials, 12¢ and upward.

Billets.—Business in this line is quiet, with quotations nominally \$19.25 @ \$19.50.

Rails and Track Supplies.—The large business in Rails known to have been placed in the East and the order just given to the Colorado Fuel & Iron Company for 26,000 tons by the Union Pacific Railroad inspire strong hopes of good buying by the railroad systems making their headquarters here, but so far the local railroad interests have not been inclined to enter the market. The Rail mills are, however, making repairs and getting matters in shape so as to be ready to start as soon as sufficient business is secured. Quotations range from \$25 to \$27 for Steel Rails, according to quantity; 1.55¢ @ 1.60¢ for Splice Bars; 2.55¢ @ 2.60¢ for Track Bolts with Hexagon Nuts, and 1.90¢ @ 1.95¢ for Spikes.

Old Rails and Car Wheels.—No transactions are reported in Old Iron

Rails. The railroad companies having stocks on hand are asking \$14, which is considered a prohibitory price by dealers and consumers. Old Steel Rails are also neglected, with nominal quotations \$7.50 @ \$10, according to length. Transactions are reported in Old Car Wheels, but only in a speculative way. Consumers are doing nothing.

Scrap.—Dealers report very little inquiry at present. Consumers are holding off until after the close of the year. Under the circumstances all quotations are nominal, but are continued in the absence of transactions. Quotations are as follows: No. 1 Forge, \$11; No. 1 Mill, \$8.25 @ \$8.50; Sheet Iron, \$4.50; Pipes and Flues, \$8; Axles, \$16; Horseshoes, \$11; Fish Plates, \$12; Spikes and Bolts, \$10; Cast Borings, \$4.50; Wrought Turnings, \$6.50; Axle Turnings, \$8; Heavy Cast, \$9.50; Stove Plate, \$7.75; Malleable Cast, \$8; Mixed Steel, \$7, gross ton; Leaf Steel, \$14.50.

Metals.—Lake Copper is quiet, but prices are firm at 11¢ for car lots, and 11.25¢ for small lots. Casting Copper is quoted at 10½¢, but the local demand has fallen off. Spelter is dull and weaker, being quoted at 3.50¢ @ 3.55¢. Pig Lead dropped during the week to 3.05¢, but has reacted to 3.10¢, although the demand is rather light.

St. Louis.

(By Telegraph.)

Office of *The Iron Age*,
Bank of Commerce Building, }
St. Louis, December 20, 1893.

Pig Iron.—The conditions prevailing last month continue, dullness, amounting almost to stagnation, being the only feature of the market. Consumers are cleaning up their stocks preparatory to the annual inventory, and will not be in the market until after the turn of the year. Prices are unchanged, as follows, for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry	\$13.25 @ \$13.50
Southern Coke, No. 2 Foundry	11.50 @ 11.75
Southern Coke, No. 3 Foundry	10.75 @ 11.00
Southern Gray Forge	10.25 @ 11.50
Southern Car Wheel.....	17.25 @ 18.25
Lake Superior Car Wheel..	16.50 @ 17.00
Ohio Softeners.....	16.00 @ 16.50

Bar Iron.—There is no improvement noticeable in this department; sales are made from mill as low as 1.35¢, half rates, f.o.b. St. Louis, and it is intimated that this price has been shaded. Jobbers report a dull trade at 1.70¢ @ 1.80¢.

Barb Wire.—The demand has dwindled down to almost nothing and prices have weakened in sympathy. Mills quote Painted at \$1.95 @ \$2, with Galvanized at 40¢ per cwt. advance. Jobbers report sales as being extremely light and quote Painted at \$2.10 and Galvanized at \$2.50.

Wire Nails.—The Wire Nail market seems to be practically demoralized, and carload lots are quoted as low as \$1.30, and in extreme cases \$1.25 is made. Jobbers ask \$1.45 @ \$1.50.

Rails and Track Supplies.—Trade in this department continues dull and prices are unchanged, as follows: Splice Bars, 1.65¢ @ 1.70¢; Spikes, 1.95¢ @ 2¢; Bolts, Square Nuts, 2.10¢; with Hexagon Nuts, 2.50¢; Links and Pins, 1.85¢ @ 1.90¢. Old Iron Rails, are unchanged at \$13.50; Steel Rails are looking up a little and negotiations are

in progress for several good orders. We quote \$26.50. @ \$27.

Pig Lead.—This metal seems to have settled down to a 3¢ basis. Producers refuse to entertain a lower figure than this and consumers are now paying this price. The transactions are few and not heavy.

Spelter.—Outside of an occasional carload order there is nothing to note. Sellers ask 3.50¢ @ 3.55¢, which consumers would doubtless willingly pay if they had any use for the metal at this time, but it appears they have not. The sales for delivery next year are not heavy.

Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, }
PITTSBURGH, December 19, 1893.

The same unfavorable report of the condition of the Iron and Steel trades must be presented again this week. As we get to the close of the year the decrease in amount of business being offered becomes more marked, and as a direct consequence competition becomes keener and prices are shoved lower. For some time past the condition of the market has been such that there is no established price for anything. A quotation on a certain article based on an actual sale given this week may be considerably out of the way next week. The facilities of some of the larger Pittsburgh establishments to turn out material at a low cost have certainly been severely tested during the past two or three months. Nevertheless they go right on taking order after order at prices that other concerns could not touch, and seem to regret that they cannot take everything that is offered. With new and lower wage scales to go into effect in several of the plants of a large Pittsburgh maker at the first of the year it is not improbable that the severest competition is yet to come. No improvement in business can come until after the first of the year, but it is the universal hope that the long desired turn in trade is not far off. The present condition of business is unnatural and cannot always exist.

Pig Iron.—The only new event of the week was the agreement made by the city furnaces to lower the price of standard Gray Forge Iron 50¢ per ton, or from \$10.50 to \$10, Pittsburgh. This price means \$9.35 in the Mahoning Valley and must be crowding cost very hard. Notwithstanding the reduction in price there has as yet been no perceptible increase in demand, but this may come later on. Bessemer is also in very light demand with prices a shade lower. One of the Lucy Furnaces has gone in after being banked some four or five months. Pittsburgh is now making nearly as much Iron as ever before in her history, and this fact, more than anything else could do, proves the superiority of this district over all other places for the cheap production of Pig Iron. We quote as follows:

Neutral Gray Forge.....	\$10.00 @ ... casb.
All-Ore Mill	10.00 @ \$10.25
No. 1 Foundry.....	11.75 @ 12.00 "
No. 2 Foundry.....	11.25 @ 11.50 "
Bessemer	10.75 @ 11.00 "

We note a sale of 2000 tons of Bessemer for first three months of next year at a price equal to about \$10.75, delivered at buyer's mill. Also a sale of 2000 tons of low phosphorus Bessemer, same delivery, at a shade under \$14, delivered.

Ferromanganese.—Very dull. We quote \$51.50 @ \$52, delivered, for 80% domestic.

Structural Material.—While a good deal of new work is coming up in the West, very little new business is being offered from this vicinity. Past events warrant the statement that Pittsburgh will get its full share of the trade, regardless of where deliveries may have to be made. While we repeat quotations of last week it should be noted that these are only nominal and continue to be shaded as occasion requires. We quote as follows: Beams and Channels up to 15 inches, 1.45¢ @ 1.60¢, according to size of order; Angles and Universal Plates, 1.45¢ @ 1.50¢; Tees, 1.70¢ @ 1.75¢.

Plates and Sheets.—Two good sized orders for Tank Steel were placed here last week at a price that certainly meant little or no profit to the seller. Demand in general is quiet, but occasionally a good order comes up, which generally calls out from makers quotations which a few months since would have been thought impossible. We quote as follows: Tank Steel, 1.35¢ @ 1.37½¢; Shell, 1.55¢ @ 1.60¢; Flange, 1.65¢ @ 1.75¢; Marine, 1.75¢ @ 1.85¢; Ordinary Fire Box, 1.85¢ @ 1.95¢, and Railroad Fire Box, 2¢ @ 2.15¢. The Sheet trade is at a standstill and we make nominal quotations as follows: No. 24 Soft Steel Sheets, 2.40¢; No. 26, 2.50¢, and No. 27, 2.60¢.

Steel.—Business is very light and no improvement is expected until after the first of the year. On account of the limited way the mills are being operated, a purchase of 500 tons of Billets now is equivalent to a purchase of 2000 tons when consumers were operating their plants to full capacity. There is no established price. For a fair sized order, with favorable terms of settlement, \$16.50 at maker's mill could be done. For small orders \$16.75 @ \$17 is asked. We note a sale of 300 tons at \$17 at maker's mill for January delivery. The new Bessemer plant of the National Tube Works Company is now in successful operation.

Rails.—The local mill was on Billets last week, but went back to Rails yesterday. Nothing new developed during the week.

Muck Bars.—We quote at \$20.50 @ \$21, delivered at buyer's mill, for best grades. We note a sale of 500 tons at \$21, delivered, for January. Demand is very light.

Bars.—The demand shows a marked falling off this month, and mills here and in the Valley are running very light. Very little stock is being made, owing to the uncertainty of the future. Prices are weak, and for good orders with desirable specifications exceptionally low prices continue to be made. Valley mills continue to quote 1.80¢ at mill for Bar Iron, which is shaded, however, for desirable specifications. Soft Steel Bars are quoted at 1.30¢ @ 1.35¢. These prices are also shaded to some extent.

Wire Rods.—Nothing new developed during the week and we continue to quote \$24.50, at mill, for delivery in the first quarter of next year. This price would be shaded for desirable business.

Skelp Iron and Steel.—We quote Grooved Steel Skelp at 1.10¢ @ 1.15¢; Sheared, 1.20¢ @ 1.25¢; Grooved Iron Skelp, 1.30¢ @ 1.35¢; Sheared, 1.45¢ @ 1.50¢.

Barb Wire.—As is usual at this season of the year the demand is light, but it is expected that orders for delivery next spring will soon be placed. In fact, some business of this nature has already been done. We quote as follows: Four Point Galvanized 2 15¢ @ 2 20¢ in carload lots, and 2 25¢ @ 2 30¢ in less quantities. We quote Plain Wire at 1 40¢ @ 1 45¢ for Nos. 6 to 9 in carload lots.

Wire Nails.—Business has dropped off considerably during this month, and as a result one large mill has gone on single turn, while another will probably close altogether as soon as orders now on hand have been filled. Makers state that the probable passage of the Wilson bill is causing much of the uncertainty surrounding the future of the Wire Nail trade. We quote Wire Nails at \$1.15 in carload lots at mill. Cut Nails are in fair demand and are ruling at 95¢ @ \$1. at mill, according to nature of order.

Connellsville Coke.—A number of contracts for Furnace Coke are now under negotiation and will probably be closed this week or next. As yet but little has been done in this direction, furnaces holding off to some extent. For the week ending December 9 there were 8425 ovens in the Connellsville region in blast and 9088 idle, with a total estimated production for the above week of 79,750 tons. We continue to quote Furnace Coke at \$1.10, Foundry at \$1.30 to dealers and \$1.45 to consumers, Crushed Coke \$1.75 to consumers, all in tons of 2000 lb, f.o.b. cars in Connellsville region.

Financial.

The last weeks of the fast closing year bring little indication of solid improvement in the general business situation. Trade and speculation continue alike dull. Announcements of suspension of work in mills and factories are again an unpleasant feature of the daily press reports, and the large volume of unemployed labor increases rather than diminishes. President Gompers of the Federation of Labor places the number of the unemployed at 3,000,000, and many of them have but small prospect of work during the entire winter. In numerous lines of trade and manufacture in which distinct signs of improvement were visible a few weeks ago, a partial relapse to dullness seems to have set in. This is especially true of the woolen and textile trades, as well as in the leather, hat, glove and other cognate industries, which are suffering from severe depression. At the same time supplies are becoming exhausted after months of reduced production, and the pressure of actual needs has induced a moderate activity in certain lines of trade, notably the metal and provision industries, which, however, does not counterbalance the unfavorable features displayed by the general trade reports.

Railway earnings, a sure gauge of the general business condition of the country, make a poor showing for the first weeks of this month, and as the bulk of the grain traffic has already been handled for this season, the roads which depend largely on that freight for their earnings are unlikely to make a better exhibit of returns in the near future. The *Financial Chronicle* computes the gross earnings of 130 railroads for November at \$46,610,384, a decrease of \$3,831,411 as compared with the same month of last year. From January 1 to November 30 124 railroads

earned \$479,912,167, a decrease of \$6,538,360 as compared with the corresponding period of last year. The aggregate gross earnings of all roads reporting for the first week in December show a decrease of 13.3% as compared with last year, the loss being larger than for any week since last September. This unfavorable average is also fairly reflected in the returns which have come in for the second week of the month.

Business failures in the United States last week, as reported by *Bradstreet's*, numbered 337, against 383 in the previous week and 298 a year ago. *Dun's Review* makes the failures for the week number 339 in the United States, against 279 last year. The list for the week includes seven banks, with one of the oldest private banks for \$500,000, an agricultural machinery establishment for \$1,000,000, an iron works for \$500,000, a heavy tobacco dealer for \$500,000, a lumber concern for \$150,000 and a dry goods concern for \$150,000, making \$2,500,000 for five failures. The current week has already seen one or two further failures of magnitude, which will bring the record for the month up to a very heavy figure.

The monthly statement of exports and imports for the month of November shows a large balance of trade in favor of this country, exports reaching \$90,000,000, while imports were only \$49,000,000. About the most notable change of the week in the financial world is found in Saturday's statement of the New York banks, which shows for the first time in many weeks an actual decrease in the surplus reserve. The loss, however, was only \$400,000, and the surplus still stands at \$78,000,000, insuring a continuance of the present low rates of interest. The exports of specie made last week—which have not been supplemented this week, in spite of expectations—were easily counterbalanced by receipts of currency from the interior, which kept up to about the average of the former week. A gratifying feature of the statement is the fact that loans and discounts show a further increase of \$3,078,000. This is, however, described as largely on warehouse receipts for grain and cotton. Stock Exchange loans make still but a small figure, and the demand for money from manufacturing and other interests continues slight. Meanwhile the banks continue in a more or less congested condition, which, although it may not be increased in intensity, shows no present signs of material relief. Until the confidence of the country is restored by the removal of the existing condition of uncertainty in regard to the tariff and financial legislation, no practical man expects to see any general recovery of industry and speculation.

The loan market maintains its easy condition, money on call being in abundant supply at rates ruling from 1 to 1 1/2 per cent., averaging the lower figure, with renewals at the same rates. Call loans on actual stock collateral were even made as low as 1/4 per cent. last week. The supply is large from many sources, both of call and time money. The latter accommodation is freely offered at about 2 per cent. from 30 to 60 days, 3 per cent. from 90 days to 4 months, and 3 1/2 @ 4 per cent. for 6 months. The demand does not, however, increase, and would-be lenders have the usual difficulty in placing their money. Mercantile paper is in good demand, and the best kinds find a ready market. The supply is not large. Ruling rates are 3 1/2 @ 4 per cent. for

endorsed bills, 4 1/2 @ 5 for best single names, and 5 @ 5 1/2 for others.

Business on the Stock Exchange has been barren of interest during the greater part of the week. Speculation continues confined almost entirely to professional traders, and the volume of transactions has been very narrow outside half a dozen stocks. Sugar received some attention from the professionals at the close of last week, and rose sharply several points for some unexplained reason, easing off again to its former level during the present week. Saturday's market closed dull and depressed, opening on Monday in a similar condition. A mysterious trouble in New England shares on the latter day, due to large selling orders of that stock, served to rouse the market. Many of the other railroad stocks declined in sympathy, but not to the same extent as New England, which on Tuesday suffered a further sharp fall of 5 points, selling a trifle under 20, as against 30 a week ago. A drive was made by the bears on the Vanderbilt stocks, St. Paul and other issues, but the market maintained a gratifying strength throughout, closing firm, with prices showing but slight declines. The outside fluctuations in the more active stocks are shown in the following list, together with closing prices on December 20:

	High est.	Low- est.	Closing Dec. 20.
Am. Sugar Ref.....	84	79 1/2	81 1/2
Atchison, T. & S. F.	19 5/8	17 1/2	17 1/2
Balt. & Ohio.....	71 1/2	70	70 1/2
Chicago Gas.....	68 1/2	64	64 1/2
Chic., B. & Q.	78 1/2	76	76 1/2
Chic., Mil. & St. Paul.	63 3/8	59 1/2	60
Chic., Rock Isl. & Pac.	68 1/2	65 1/2	66 1/2
Del. & Hudson.....	135 1/2	131 1/2	131 1/2
Del., Lack & Western.	164 1/2	160	162 1/2
Gen. Electric.....	39 1/2	35 1/2	36 1/2
Lake Shore.....	126 1/2	121	123
Louisville & Nashville.	50	48 1/2	48 1/2
Manhattan.....	129 1/2	125	127 1/2
Missouri Pacific.....	24 1/2	23	23
National Lead, Common.	26	23 1/2	23 1/2
New Jersey Central.....	117	116	116
New York Central.....	102	99 1/2	100
N. Y., L. E. & Western.	15 1/2	14 1/2	15
Northern Pacific, Pfd.	22 1/2	19 1/2	20
Philadelphia & Reading.	20 1/2	18 1/2	18 1/2
Richmond & West Pt., Term.....	28 1/2	21 1/2	23 1/2
St. Paul & Omaha.....	38 1/2	36 1/2	37
Union Pacific.....	21 1/2	19 1/2	20
Western Union.....	88 1/2	85	85 1/2

Railway and miscellaneous bonds have not been in request to the extent of the business in these issues of the past few weeks. The first-class, paying bonds have, in fact, been generally absorbed, and there is no real demand for those of a speculative kind. The market closes weak, with prices showing a considerable decline. Government bonds are firm, the latest quotations being as follows:

	Bid.	Asked.
2s, 1891, registered.....	95 1/2	....
4s, registered.....	118 1/2	114
4s, coupon.....	114 1/2	115 1/2

The market for sterling exchange has been firm and active, but still below the gold exporting point. There is a good inquiry from remitters, but the receipts of commercial bills, which have been moderately large, have largely met the increased demand. Actual business was done on Wednesday at \$4 84 1/2 @ \$4.85 for 60 days, \$4.86 1/2 for demand, \$4.87 1/2 for cables and \$4.88 1/2 @ \$4.84 for commercial. Domestic exchange on New York is quoted as follows: New Orleans, commercial 125 discount, bank par; Charleston, buying 1/8 discount, selling 1/8 premium; San Francisco, sight 5, telegraph 10 premium; Savannah, buying 1/8 discount, selling par a 1/8 premium.

Bar silver closed in London on Wednesday at 32 1/8 pence, and in New

York at $70\frac{1}{2}\text{¢}$ per ounce. Nearly 1,000,000 ounces of the metal have been exported during the week by New York houses.

Shipments of anthracite coal for the month of November were nearly 4,000,000 tons, an increase of 150,000 tons over those of the same month of last year.

Wheat rules at the lowest prices known, with shipments below the average. Corn is stronger on a reduction of the earlier crop estimates, with some considerable export sales. Cotton prices, while continuing low, have experienced some advance during the week on free buying for export account.

Metal Market.

Copper.—Business has been quiet throughout the week. Prices have undergone no radical change, but quotations made in various sources are considerably apart and leave a ripple on the surface that seems to have a rather annoying effect in more quarters than one. Copper was supposed to be well under control and sellers who represent the producers profess to maintain something like uniform prices. In some quarters it is denied that there is any understanding or agreement and that prices have not been cut below a level that is supposed to represent sellers' ideas of value. There is what may be termed strong circumstantial evidence that, whatever the surface appearances may be, the market is slightly free from restraint and not particularly strong as viewed from the statistical position. Producers of most brands of Lake Superior Ingots quote $10\frac{1}{2}\text{¢}$ and claim to be sold ahead. Lots from second hands could have been secured at $\frac{1}{2}\text{¢}$ less, however, and on the Metal Exchange there were offers to sell at 10.30¢ @ 10.35¢ for January delivery. Electrolytic is quoted at $9\frac{1}{2}\text{¢}$ @ 10¢ . and ordinary casting stock at $9\frac{1}{2}\text{¢}$ @ $9\frac{1}{4}\text{¢}$, according to brand and quantity, but those prices represent sellers' idea of value rather than actual trading basis where large lots may be involved.

Pig Tin.—The movement in prices has been very narrow, and the line of value is practically the same at this writing as it was a week ago. Speculation remains dormant, pending developments in the tariff matter or other incentive. Dealers have purchased cautiously, and consumers have bought even more sparingly than usual at this season of the year. The bulk of business was at prices on the basis of 20.50¢ net cash for Straits, in 10-ton lots, near future delivery. Semi-official data show that 1450 tons were shipped from the Straits to Great Britain and America during the first half of December, besides 375 tons to Continental Europe, against a total of 655 tons during the corresponding period last year. Since July 1 about 770 tons have arrived here, the greater portion of which is in bond, and there are now about 650 tons afloat for this point.

Pig Lead.—Dealings have been on a very moderate scale and there is no sign of livelier demand, except perhaps in a speculative circle, where it not frequently happens that "demand" is nicely timed for effect upon prices. In other words, the best bidding has been from sources in which manipulation is common. Consumers have been influenced very little up to the present time. In any event they have purchased moderately and seem to have

given little more than passing attention to the speculative maneuvering. The sales effected were chiefly at 3.20¢ @ $3.22\frac{1}{2}\text{¢}$ for carload and larger lots, near future delivery. Bullion price has been down to 3.10¢ during the week and moved up to 3.20¢ subsequently, while $3.27\frac{1}{2}\text{¢}$ for January and 3.30¢ for February were bid on the Exchange.

Spelter.—Western brands are very irregular in price at the present time. Some may be had at 3.70¢ , while 3.80¢ is generally quoted for what is classed as prime and 3.90¢ reported paid for choice. The demand is slow and hesitant. The offering is uneven. Upon the whole the market shows rather poor form, and a turn for the better is dependent in a good measure upon the policy of producers in the matter of restricting their output.

Antimony.—There has been only a moderate business doing and prices are barely steady at $9\frac{1}{2}\text{¢}$ for Hallett's and 10¢ for Cookson's in round lots.

Tin Plate.—In some quarters very fair sales were reported for ordinary Coke Plates for spring and summer delivery. Such reports, however, were few and strictly the exception. The general statement was that business has been slow in both prompt and forward deliveries. Prices show little change, but the buyer seems to have gained advantage on such changes as have taken place, more particularly on spot stock. Spot quotations are as follows: Coke Tins—Penlan grade, IC, 14×20 , scarce; J. B. grade, do., $$5.30$; Bessemer full weight, $$5.30$; light weights, $$4.85$ @ $$4.90$ for 100 lb, $$4.80$ for 95 lb, $$4.62\frac{1}{2}$ for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $$5.60$; Siemens Steel, IC basis, $$5.65$; IX basis, $$6.75$ @ $$6.80$. Charcoals—Melyn grade, IC, $$6.35$; Crosses, $$7.87\frac{1}{2}$; Allaway grade, IC, $$5.60$; Crosses, $$6.75$; Grange grade, IC, $$5.75$; Crosses, $$6.85$. Charcoal Ternes—Worcester, 14×20 , scarce; do., 20×28 , $$11.35$; M. F., 14×20 , $$7.35$ @ $$7.37\frac{1}{2}$; do., 20×28 , $$14.75$; Dean grade, 14×20 , $$5.35$; do., 20×28 , $$10.50$ @ $$10.60$; D. R. D. grade, 14×20 , $$5.15$; do., 20×28 , $$10.10$; Alyn, 14×20 , $$5.85$; do., 20×28 , $$10.50$; Wasters—S. T. P. grade, 14×20 , $$4.75$; do., 20×28 , $$9$; Abercarne grade, 14×20 , $$4.60$; do., 20×28 , $$8.87\frac{1}{2}$.

The monthly production of Copper in the United States since July, 1892, has been as follows, the first column giving the aggregate returns from the reporting mines, which include the principal Lake, Montana and Arizona producers; the second being the metal from pyrites and from a number of smaller outside sources, being estimated:

	<i>American Product.</i>		
	Reporting mines.	Outside sources.	Total.
1892.	Gross tons.	Gross tons.	Gross tons.
July.....	9,294	924	10,218
August....	10,807	870	11,677
September...	9,710	994	10,704
October....	9,668	1,259	10,957
November...	9,888	1,036	10,924
December...	9,872	1,174	11,046
Total six months		59,230	6,267
			65,526
1893.			
January...	9,187	989	10,176
February...	8,213	1,042	9,245
March.....	9,065	1,321	10,386
April.....	11,775	1,042	12,817
May.....	12,706	1,042	13,748
June.....	11,524	1,042	12,566
Total six months		62,470	6,478
			68,938
1893.			
July.....	11,049	1,042	12,091
August....	11,745	1,042	12,787
September...	11,750	1,042	12,792
October....	11,503	1,042	12,545
November...	10,705	1,042	11,747

The product of the foreign reporting mines and the United States exports were as follows:

	Foreign reporting mines.	United States exports.
1892.	Gross tons.	Gross tons.
July.....	6,358	July.....
August....	6,883	August.....
September...	5,478	September....
October....	6,476	October....
November...	6,789	November....
December....	7,666	December....
Total six months		30,855

	Foreign reporting mines.	United States exports.
1893.	Gross tons.	Gross tons.
January....	5,736	January.....
February....	6,762	February.....
March.....	6,896	March.....
April.....	6,913	April.....
May.....	6,806	May.....
June.....	7,995	June.....
Total six months		20,048

	Foreign reporting mines.	United States exports.
1893.	Gross tons.	Gross tons.
July.....	6,095	July.....
August....	7,067	August.....
September...	6,303	September....
October....	7,081	October....
November....	6,953	November....
Total six months		20,861

New York.

Office of *The Iron Age*, 96-102 Reade street, New York, December 20, 1893.

Pig Iron.—Transactions in Pig Iron are very light. The failure of the Crane Iron Company restricts the quantity of standard Lehigh Iron available for the markets, although it is understood that the furnaces may be started to work up raw material on hand. Some of the pledged stock of Iron may be sold peremptorily to satisfy advances. We quote: Northern brands, $$14$ @ $$15$ for No. 1; $$18$ @ $$14.25$ for No. 2; $$12.25$ @ $$12.50$ for Gray Forge, at tidewater. Southern Iron, same delivery, $$18$ @ $$14$ for No. 1; $$12$ @ $$13$ for No. 2; $$11.50$ @ $$12.25$ for No. 3; $$11.75$ @ $$12.25$ for No. 2 Soft, and $$12.25$ @ $$12.50$ for No. 1 Soft. Gray Forge is $$11.25$ @ $$12$.

Spiegeleisen and Ferromanganese.—Practically nothing is doing in foreign material of this class. We quote Spiegeleisen, $10\frac{1}{2}\%$ @ $12\frac{1}{2}\%$, $$21.50$ @ $$22$, and $20\frac{1}{2}\%$, $$25.50$ @ $$26$, on cars, Jersey City. Ferromanganese remains nominally $$55$ @ $$55.50$.

Billets and Rods.—The market is weaker, in sympathy with Pittsburgh advices. We quote nominally: Domestic Billets, $$19.50$ @ $$22$, and foreign Billets, $$28$ @ $$28.50$, tidewater; domestic Wire Rods, $$27$ @ $$28$, and foreign Rods, $$39$ @ $$39.50$, tidewater.

Steel Rails.—One small order for a few hundred tons for a coal road was taken for immediate delivery by the Pittsburgh Mill. The South Mill of the Lackawanna Company starts to day double turn for a considerable period. Local officers of the Colorado Company state that the Union Pacific order taken by them is for 26,000 tons and not 30,000 tons, as printed in press dispatches. The price for 1894 delivery remains $$24.80$ at tidewater.

Track Material.—We quote as follows for small lots: Spikes, 1.70¢ @ 1.90¢ ; Fish Plates, 1.25¢ @ 1.40¢ ; Track Bolts, Square Nuts, 2.10¢ @ 2.40¢ , and Hexagon Nuts, 2.30¢ @ 2.50¢ , delivered. Concessions would be made for round lots.

Manufactured Iron and Steel.—The material for the Scribner Building was taken this week by a Pittsburgh mill. A lot of about 250 tons of Angles for the Ocean Grove Auditorium was secured by another Western works. A number of stories printed in the daily press are untrue. Among them that of

an indefinite stoppage of the Passaic Rolling Mill, and that of a consolidation of interests by the Columbia Works, the Elmira Bridge Company and the Jackson Architectural Works. Very little is doing in Plates, and Bars are very dull. We quote nominally: Beams up to 15-inch, 1.65¢ @ 1.80¢; 20-inch, 1.80¢ @ 2¢; 24-inch, 2¢ @ 2.25¢, for round lots; Angles, 1.55¢ @ 1.75¢; Universal Mill Plates, 1.50¢ @ 1.75¢; Tees, 1.80¢ @ 2¢; Channels, 1.65¢ @ 2¢, on dock. Steel Plates are 1.45¢ @ 1.60¢ for Tank; 1.60¢ @ 1.90¢ for Shell; \$1.90 @ 2.15¢ for Flange, and 2.25¢ @ 2.80¢ for Fire Box, on dock; Refined Bars are 1.45¢ @ 1.9¢, on dock, and Common 1.85¢ @ 1.50¢; Soft Steel Bars are 1.45¢ @ 1.70¢; Scrap Axles are quotable at 1.65¢ @ 2¢, delivered; Steel Axles, 1.65¢ @ 1.90¢, and Links and Pins, 1.65¢ @ 1.80¢; Steel Hoops, 1.70¢ @ 1.90¢, delivered; Cotton Ties, 70¢ @ 72½¢ per 45 lb bundle, at mill; Machinery Steel, 1.45¢ @ 1.50¢; Toe Calk, 1.90¢ @ 2¢ and Sleigh Shoe, 1.65¢ @ 1.75¢, delivered.

Old Material.—The only transaction recorded is a sale of 200 tons of Old Iron Rails, special makes, at \$12. The market is lifeless and weak.

The Lukens Iron & Steel Company of Coatesville, Pa., have appointed W. E. Clark as their New England representative, with offices at 8 Oliver street, Boston. Mr. Clark is well known to the Iron and Steel trade in Boston, having been for many years connected with William M. Horne & Co.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, December 20, 1893.

Pig Tin prices are about 10/ lower and the market is very tame at the decline. Early in the week there were reports of the payment of prices in the East relatively higher than those that ruled here. Some merchants gave a premium of 15/ over spot prices. Other buyers failed to respond in the face of Straits shipments of 1900 tons during the first half of the month and expected heavier shipments during the last fortnight, together with disappointment in American demand, upon which there was much buying a short time ago. An additional weak feature turned up in the form of weaker advices from the East. At present the market is feverish, with Straits quoted at £75. 5/ for prompt, and £76. 5/ for three months' futures.

Copper has undergone comparatively little change in price, and there is no change in the general situation. Dealers sold forward quite freely on the advance that took place early in the week, and there was also more or less realizing by outside holders. Those sales operated as an offset to the strength previously developed from large orders from India, and caused a reaction from previous highest figures to present rates, or a decline of 5/ from the highest point. Transac-

tions in furnace material have been limited, as smelters are unwilling to pay the prices demanded. Spot stocks decreased 1110 tons during the first half of the month and the visible supply has fallen off 555 tons. Chili charters were 1500 tons. Owing to the fact that four largest producers of Refined Copper have withdrawn from the market, Tough Cake and Best Selected English will probably rule higher in the future than other kinds. At the close the market was quiet. Quotations were £43 for Merchant Bar prompts; £43. 10/ for three months' futures, and £40. 10/ for Best Selected English.

Tin Plate has been in somewhat more active demand, but except for moderate quantities of Bessemer Cokes few orders have been placed. Business is restricted in nearly all lines by the lowness of prices made by buyers. The sales made have been chiefly from stock on hand, and for early delivery. Business has been resumed at the Waterloo works. Liverpool quotations are as follows:

IC Charcoal, Alloway grade..... 12/3 @ 12/9
IC Bessemer Steel, Coke finish..... 11/3 @ 11/6
IC Siemens "..... 11/6 @ 11/9
IC Coke, B. V. grade, 14 x 20..... 11/3 @ 11/6
Charcoal Terne, Dean grade..... 10/9 @ 11/6

Pig Lead has been in only moderate demand, but prices are steadier at £9. 10/ for soft Spanish.

Spelter is weaker in prices and finds slow sale. Present quotations about £16. 12/6 for ordinary Silesian.

There is no change in the Iron or Steel trade, except that prices for warrants have ruled lower, receding to 43/6 for Scotch, 35/7½ for Cleveland, and 45/6 for Hematite.

A. R. Whitney & Co. of New York are just completing a shipment to Hayti of the iron work for a dock, consisting of a number of steel cylinders, No. 10 gauge, stiffened with angles, to be filled with concrete and fitted with a heavy shoe on top. For the same party they are sending out an iron warehouse, a railroad bridge and two small foot bridges.

An export order just placed for Cuba was for 500 tons of cast iron pipe and 300 tons of wrought iron pipe. The former was taken at \$17.50, at works, by the Bessemer, Ala., shop, being probably the first export order of this character taken by a Southern pipe foundry.

McMann & Taylor, 42 Cliff street, New York, dealers in steam fittings, plumbers' supplies, &c., have been made agents for this territory of the Eddy Valve Company. They will carry their goods in stock.

At the close of the year with such a record for dull trade as 1893 it is somewhat cheering to learn that there are a few concerns whose books show an increase in business. Among the number is the New York Iron Roofing & Corrugating Company, controlling two factories at Jersey City and Philadelphia respectively. They state that during this year their business has reached 3500

tons of black sheets, corrugated and painted and for other forms of roofing and siding, also 400 tons of galvanized roofing. This is a marked increase over 1892.

The annual returns of the Clyde shipbuilding industry show that the total output for 1893 was 208,000 tons, against 336,000 tons last year.

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HARDWARE.

Condition of Trade.

THE year draws to a close with the falling off in business which is expected at this season. The approach of the holidays, the withdrawal of travelers from the road, the attention being given to plans for the new year's business, the effect of the financial disturbance and business depression of the past six months, the uncertainties of Tariff legislation, the weakness in the prices of some staple goods and the probability of lower prices in other lines—are influences which at this time are conspiring to make the trade defer all unnecessary purchases. The volume of business is therefore, to a good degree, limited to a few seasonable supplies and such goods as are needed for immediate sale. The improvement in the financial condition is a matter for congratulation, with the prospect of a better state of things in the near future than has characterized the last part of the present year.

Chicago.

(By Telegraph.)

The Shelf Hardware jobbers have enjoyed a comparatively fair trade the past week, but believe that business is now about over for this year. Salesmen are very generally on their way home to pass the holidays, and there will be few orders transmitted by mail direct from country buyers. Manufacturers' agents report a quiet condition of affairs in almost every line. A good demand has been experienced for Heavy Hardware. The trade in Iron and Steel is fair from small consumers, but there has been an unusually large movement in Sleigh stock, on which prices have risen owing to the scarcity of material. A stiff advance is asked on made-up Cutters.

St. Louis.

(By Telegraph.)

There is very little doing in the Hardware trade. The closing half of December is about as dull a period in the jobbing Hardware trade as they experience during the entire year, and this week appears to be even more so than usual. Salesmen are all in off the road, and arrangements are now in progress for the new year. So far as the jobbing Hardware trade is concerned the present year is practically gone and 1894 is now being discussed. The present year will go down in history as one of the most disastrous

which the Hardware trade has experienced for 20 years past, and many will be glad when January 1 comes so as to blot 1893 out altogether. What little trade there is, is mostly holiday goods for local or nearby delivery. Collections are steadily improving.

Louisville.

W. B. BELKNAP & Co.—The fine, open, seasonable winter that we have had so far in this part of the country has conspired to make business fairly good. Prices, however, have not shown any special strength or any tendency to advance so far, but it would seem impossible that a continued demand, with the production being constantly limited by the closing down of various mills, could help but find some response after the first of the year.

The restoration of confidence is coming on slowly but surely. In New Albany, for instance, where the woolen mill and plate glass works had suspended, both of these concerns are now in operation, giving welcome employment to a large number of operatives. The rolling mills both there and at this place are running part of the time, enough to keep men together and customers supplied.

Some of the larger corporations here which passed dividends in July have already declared them for January, thus putting their stock or their securities on a paying basis and making the holders feel much more comfortable. The purely Christmas business is less marked than usual. The more expensive lines of goods have not been laid in by the merchants as heretofore, a wise precaution, as consumers are hardly able to indulge in such luxuries.

The smaller or country towns appear to be doing well, as are the people in the country; all sorts of farm products are sold readily at good prices. The suffering, with which there is naturally and commendably much sympathy, is mainly confined to the towns, to which large numbers of people have flocked with the idea that they would be taken care of by charitable individuals and organizations. Free coal, free soup houses, wayfarers' rests and other such inducements are held out in name and in fact, and the great army of the unemployed is not suffering from deserters, but rather from incessant recruiting. Very much has been made of the situation in the public prints. Many of those who never have anything to do because of their lack of skill or industry have come to look upon themselves as the wards if not of the nation, of the municipality which suits them best. Fortunately we have here an unusually well ordered board of organized charities, and much of the care of the real unfortunates as well as the detection of the impostors is laid upon it. The sensation of the day is the collapse of a span of the new Jeffersonville bridge, which occurred this morning, carrying down into the river over 40 men, half of whom were drowned.

Cleveland.

THE W. BINGHAM COMPANY.—The usual falling off in trade incident to this season of the year is perhaps a little more marked now than usual. The uncertainty of Tariff legislation, the unprecedented weakness in the price of staples and the general conservatism of all buyers are the prime factors in the present reduced sales. The country was never so bare of goods, and when the turn comes there will be such a demand for all kinds of goods as was never before known—but when will the turn come? That is the question. Orders for Wire and Wire Nails are being freely placed at the present low prices, and it seems almost impossible for these staples to go lower than they are at present. Season goods are selling unusually well. The stringency of the money market has disappeared and collections are fair.

In closing this year we wish all our friends throughout the trade a Merry Christmas and a Happy and Prosperous New Year.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—The middle of December finds our trade well up to expectations based on October and November business. The demand continues fairly steady and will continue so as long as we have our salesmen on the road. We look for a fair mail order trade during the first part of the coming month, perhaps proportionately better than usual, as dealers are by no means stocked sufficiently to run them through the mid-winter months.

We hope that tariff discussion in Congress will not be prolonged, as we fear an uncertainty more than we do the final passage of a new revenue measure. The concerted action to secure the retention of specific duties on Tin and Terne Plates as opposed to ad valorem duties has our hearty approval.

Omaha.

LEE-CLARKE-ANDRESEN HARDWARE COMPANY.—The experiences of the past two weeks have not been without their bright side as regards the jobbing Hardware trade of this section. The increased volume of business that was expected as the holidays approached has not been disappointing. The month opened auspiciously, and the colder weather, together with some snow, has given a stimulus to business which ought to show a gratifying effect at the close.

As the year draws toward a close the usual figuring and speculating on the general results of the annual "round-up" are indulged in. During the first six months there was considerable activity, and the amount of business done was much larger than for the corresponding six months of the previous year. During the last six months of the year there has been a considerable falling off in the volume of business, and the question is whether the decrease has been sufficient to wipe

out the gains made the first half of the year. We are inclined to the opinion that the total sales for the year will fall slightly below those of 1892.

It must be remembered, however, that 1892 was a "banner" year, and it could not be expected that the total volume of business this year would reach the figures of 1892, especially in view of the shortage of crops of all kinds and other disastrous experiences. Still, with all the drawbacks, this year will exceed 1891, both in regard to the volume of business as well as profits.

Portland, Ore.

CORBETT, FAILING & ROBERTSON.—Trade jogs along at the same even gait that we have at last accustomed ourselves to expect. The building season, which—as regards weather—we do not expect to stop, is at a standstill. This, of course, is owing to the depression prevailing in all lines. There is little inducement to build either business blocks or dwellings.

The holiday trade is not expected to amount to much this season. The trade requirement is for staple goods only, and at the prevailing low prices even, they do not tend to swell the volume of sales.

Collections do not show any improvement, and it is hard to say from what source they can be made.

Prices show no change, except Sisal Rope, the local Cordage works having reduced the card price to 7¢, a price never made before.

New Orleans.

A. BALDWIN & Co.—Business has quieted down considerably in the past week, and merchants are evidently waiting for the new year to see what will develop in the business situation. Even retailers are complaining of the small amount of business. Holiday goods are evidently not moving in such quantities as to make the retail merchants happy.

We usually look for a considerable dropping off of country orders in the jobbing department, as most of the merchants in the country are busy waiting on their holiday trade.

Baltimore.

CARLIN & FULTON.—During the present month the demand has been fairly good for goods appropriate to the season and orders have at least been numerous if not heavy.

The drop of the temperature to freezing point, with a fall of the beautiful snow, has helped the sale of Sleigh Bells and Skates, while the appetizing visions of sausage and mince pies have made an active demand for Meat Cutters and Stuffers.

The traveling salesmen generally return to their homes for the enjoyment of Christmas with their families, and we therefore expect few orders until the new year. Most of our customers overhaul their stocks, take their inventories, balance their books and are not disposed to purchase except for urgent wants.

After the holidays shall have passed we look for an improvement in trade, and in the South, though the present price of cotton is far from being satisfactory, yet a new crop must be planted and the demand for such necessary supplies begins almost with the first of next month.

This is the season of the year when most of the failures occur and when we hear oftener than at any other time from the debtor so unfortunate as to

be compelled to assign and to prefer among his creditors some few of his relatives, but who has also found a kind friend willing to loan him enough to offer 25 cents on the dollar.

So far this year such cases are rare, notwithstanding the general depression that has existed, and we believe collections upon the whole have been as satisfactory as they have ever been, even in far better times.

Boston.

BIGELOW & DOWSE.—A stranger visiting the different Hardware jobbers would be inclined to remark that the trade was not feeling the hard times, as everything would indicate to him a rushing business. The bulky goods sold at this season fill the packing rooms, and the various packers seem to emulate each other in making an unusual noise with their hammers, &c. Notwithstanding all their bustle, the volume of business is still below that of last year. Lower prices will account for a proportion of the falling off, but customers' orders are small, and there is the same labor required to pack them and prepare them for shipment as if they were twice the size in quantity and in value. In times like these retailers find it to their advantage to send their orders to wholesale dealers, who supply their wants quickly and at such prices that they would be losers if they waited to send orders to factories, where they must make their orders larger and run the chances of a decline before the goods are sold. There is evidently a place for the jobber in times like the present, and they will try to merit the customers' confidence so as to retain their trade when the market changes and it is safe to buy for future advances. Prices are ruling very low, and there are many orders being placed for seasonable goods for spring delivery.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—Looking at trade from the present reduced standard or standpoint, it has continued moderately active during the last two weeks, but the trade during the two weeks preceding the Christmas holidays has for some years past been weeks of exceeding activity. Therefore a comparison of trade between this year and the same weeks of 1891 and 1892 shows it has been far below the average. This we find has been general throughout the entire country, if we accept the estimate given one year ago that the bank clearings over the entire country during the month of December were many millions in excess of the previous month, and while the bank clearings for November, 1893, was 25 per cent. less than November, 1892, December is likely to fall far short of the percentage of November, 1892.

Our country trade from agricultural districts has been far more active during the last few weeks than the city trade, both in the demand for general Hardware and season and holiday goods. From a comparison of the retail trade of our city, not confined to Hardware alone, but the general trade, one would scarcely realize he was living in the same month of the year. The holiday trade has suffered in the retail department severely in comparison with former years, and they report that where a person spent a \$5 bill a year ago, he is now dividing it into from four to five portions and confining his purchases to more useful and needed articles in making his selection.

It is possible, however, that the economy practiced for the holiday season shown in our city may not be shown throughout the country, although it is probable that it is the case in all locations where they depend largely upon manufacturing industries, as the railroad earnings are somewhat of a barometer, and they report reduced earnings of about 12 per cent., and President Roberts of the Pennsylvania Railroad Company has instructed all heads of departments to enforce most rigid economy and to curtail all expenditures to the lowest possible point, and to reduce the number of employees to a minimum consistent with the safe administration of the service.

Collections are not so favorable as they have been in some of the preceding weeks.

The jobbing houses, as a rule, are arranging their force for taking the yearly inventory, and the greater part of what might be unoccupied time will be taken up with this business within the next few weeks, and the results of the year 1893 will therefore be known possibly soon after January 20.

The hard winter before the wage earner in the manufacturing districts is to be deplored. The writer has, within a few days, visited the neighborhood of our manufacturing districts, located in the upper portion of our city, where the effects of our recent panic are still visibly shown, and where a dead feeling still prevails. No animation of life is seen from the various factory windows, but closed and locked doors, with smokeless chimneys, greet one on every side.

While monetary conditions are favorable for resumption of work the demand for the goods produced in these factories is missing. Where an occasional mill has started up it is an exception, because others employing a larger number of hands have recently closed. Men, women and children stand idly about, and neighboring stores have reduced their force and reduced the wages of those who remain with them. Where thousands of turkeys and chickens hung from the grocers' doors and windows one year ago in this neighborhood the evidence now is that thousands of persons in this location will depend for their Christmas dinner upon charities' funds, and in this our Relief Association has been very active. The change from last year to this in that location is as if jumping from fairy land to a stern reality.

With this state of affairs in manufacturing districts, it is no wonder that the financial circles were amazed, and is it not wonderful that such a mischievous bill as that introduced by Senator Voorhees in the United States Senate within the last few days should have been brought forward? The bill provides that the Secretary of the Treasury shall purchase silver bullion in sufficient quantities to coin not less than \$2,000,000 per month, and shows upon the face how little consideration is given by some of our representatives in Washington to either demands of public interest or the distress of those who have recently suffered from unwise legislation. How any one should be so reckless of the interests of the country it is difficult to understand. The idle mills, the millions of unemployed, the financial, mercantile and industrial failures are all brushed aside with sweeping indifference. It is now plainly seen—which was earlier supposed—that the leader of the Senate had no heart in repeal of the so-called Sherman clause further than public opinion and President Cleveland's whip. It is asserted, however, that the intention is not serious further than to secure the votes of the silver Senators for other purposes.

but why play the game of battledore and shuttlecock when so great a danger is manifest?

The Secretary of the Treasury, Mr. Carlisle, recently stated that the silver question was now settled for many years to come. This had a pacifying effect to quiet the unrest, and while these words still sound in one's ears Congress is asked to enact a law compelling the compulsory coinage and force its acceptance by the retirement of bank notes of denominations less than \$10. This financial heresy of compelling 70,000,000 people to throw aside the convenience of these notes is bad enough, but in itself small in comparison to the danger of a renewed panic, as this law would be just as much worse than the Sherman law as the Sherman law was a better law than the Bland silver law, which existed prior to the enactment of the Sherman law. The Bland law was given a fair trial and it was found not possible to force this silver on the country and public opinion demanded its repeal. That not being possible the Sherman law was enacted. It is not at all probable that President Cleveland would sign such a law if enacted, nor would it be possible to pass it over his veto.

The worst feature, however, is the indifference to the recent object lesson of the severest panic this country has ever experienced, and at a time when we are slowly but painfully recovering from the effects, to strike a blow again at public confidence is certainly an unexplained mystery.

Notes on Prices.

Wire Nails.—The market still continues to show a declining tendency and carload lots of Wire Nails at mill are much more readily obtainable at \$1.10 than they were a week or two ago, and it is understood that sales have been made at \$1.05. The regular demand for early delivery is very moderate, but the low prices which are ruling have had the effect of inducing the placing of some fair orders. The trade are, however, to a large extent deferring purchases until after the first of the year, but at the same time buyers are watching the market carefully, so as to be ready to place their orders when there are indications of a strengthening in price.

Chicago, by Telegraph.—Matters are quiet in Wire Nails. There is more or less inquiry for spring delivery, but few Nails are wanted for December or early January. Factory lots are quoted at \$1.25 to \$1.30, Chicago, and small lots from stock are selling at \$1.35 to \$1.40.

Cut Nails.—With the unsatisfactory condition of the market the mills are to a considerable extent reducing their production and avoiding as far as possible undue accumulation of stocks. The price in the East is represented by the quotation of 90 cents for carload lots, f.o.b. mill, and is regarded by many as being as low a figure as is obtainable on regular specifications. There is, however, reason for believing that this price has been slightly shaded. Small lots from store in New York are quoted at \$1.20 to \$1.25.

Chicago, by Telegraph.—Business in Cut Steel Nails is very quiet and will

probably continue so until after the turn of the year. The reported fire at Lake Side did no damage to the works proper, but only affected the keg factory, which is operated by outside parties. The works are in active operation and will not shut down for the holidays. Prices are unchanged at \$1.15 to \$1.20, according to the character of the order, while small lots from stock are selling at \$1.25.

Barb Wire.—Barb Wire as well as other leading staples feels the effect of low prices made by manufacturers who are especially desirous of realizing on their product, and as a result still lower prices have been developed. It is understood that some sales have been made by Western makers in large lots at \$2 for Four-Point Galvanized at mill. The market is fairly represented by the quotations of leading manufacturers of \$2.10 for Galvanized and \$1.70 for Painted, with 5 cents off in carload lots. One or two of the manufacturers, however, refuse to meet current prices, and for the time being have practically withdrawn from the market. The legitimate demand is light, but some business is induced by the extremely low prices which are offering. Small lots from store in New York are quoted at \$2.35 to \$2.40 for Galvanized.

Chicago, by Telegraph.—Manufacturers who deal largely with the retail trade report as much Barb Wire sold now as last year up to the same date. The tonnage being made up of small orders, a better price is realized than if the orders were as large as are usually placed by jobbers. Manufacturers who cultivate relations with jobbers report a very quiet trade. Prices continue to be quoted at \$2.35 to \$2.40, Chicago, for Galvanized Barb Wire in factory lots; \$2.50 to \$2.55 in small lots.

Plain Wire.—The market for Plain Wire is weak and irregular, and somewhat lower prices have been developed within the past two weeks. The condition of the market is reflected in the following quotations of a well known concern, which are subject to an abatement of 5 cents on carload lots:

	An-	Gal-	
	nealed.	vanized.	
Nos. 6 to 9.....	\$1.35	\$1.75	
" 10 and 11.....	1.45	1.85	
" 12 and 12½.....	1.55	1.95	
" 13 and 14.....	1.70	2.10	

Some of the manufacturers, however, refuse to meet these prices and are naming slightly higher figures.

Lanterns.—Buhl Stamping Company, Detroit, Mich., one of whose Lanterns is illustrated in this issue, quote these goods at the following net prices:

Mascot assortment, three square lift Lanterns, assorted colors, two dash Lanterns and one head light, per case	\$5.00
Brilliant assortment, 12 square lift Lanterns, assorted colors, per case. 6.00	
Dash Board Reflector Lanterns, ja- panned blue, per dozen 5.50	
1894 Tubular head light, per dozen.. 21.00	

Venetian Ironwork Outfits — The materials for Venetian Ironwork de-

scribed in our last issue as put on the market by A. J. Weed & Co., 106-108 Liberty street, New York, are subject to a trade discount of 20 per cent. A manual relating to this work gives complete list prices on the goods.

Hammock Hooks.—Stearns' Hammock Hooks, manufactured by E. C. Stearns & Co., Syracuse, N. Y., No. 200 of which was illustrated in *The Iron Age* December 7, 1893, are sold at net prices as follows:

No.	Per doz.
200. Steel Plate Hammock Hook....	\$0.60
20. Hammock Hook .....	.60
24. Hammock Hook.....	.60

Hair Curlers.—The Unique Self Heating Hair Curler, as illustrated in *The Iron Age* December 14, 1893, is manufactured by the Unique Novelty Company, Detroit, Mich., and sold on 30 days time, or 3 per cent. discount for cash in ten days from the following net prices:

	Per dozen.
Nickel.....	\$16
Silver	24
Gold.....	36

Steel Broiler.—The Steel Broiler illustrated in our issue of December 7, 1893, and manufactured by the Cleveland Stamping & Tool Company, Cleveland, Ohio, is sold at \$1 each, from which a discount of 70 and 10 per cent. is allowed.

Adjustable Paint Burner.—The Quick Meal Adjustable Paint Burner, manufactured by Quick Meal Stove Company, St. Louis, Mo., and illustrated in our issue December 7, 1893, is sold at \$5 each, less a discount of 30 per cent.

Glass.—The week has developed few or no changes in the condition of the Glass market, although some additional factories in the West were put in operation. It is reported that some of the factories making Glass have orders which will keep them employed for some time. Local trade is limited to small orders, which is not unusual at this season of the year. Prices are reported from Pittsburgh as being 85 and 5 and 5 per cent. discount for single and 85 and 10 and 5 per cent. discount for double strength Glass. Western prices from factory are given as 85 and 7½ per cent. discount for single and from 85 and 10 and 10 to 85 and 15 per cent. discount for double strength Glass. It is understood that Western prices are in some cases made at the foregoing figures, delivered at destination. The continuous tank system used in modernly arranged Glass plants allows the production of Glass at a less cost than where pots are used. This and other improvements will aid in solving the question of making Glass profitably at a low selling price. There is a lack of uniformity in quotations made by various Plate Glass factories. It is reported that the price at which Plate Glass is being sold allows of its use as a substitute for Window Glass of the larger sizes.

ANCIENT HARDWARE

BY A. W. PARMELEE.

A paper read before the Massachusetts Hardware Dealers' Association, December 18, 1893.

Mr. President and Gentlemen of the Hardware Association:

Your committee, in asking me to speak to you this evening, intimate that I am a patriarch, and that I have seen American Hardware develop from its very beginning. When we reflect that less than 50 years ago nearly all our Hardware was imported from other countries, and that many at this table have in their lifetime seen American Hardware manufactures grow from nothing to their present magnificent proportions, I do almost feel like one of the old Hardware pioneers of America.

PREHISTORIC AMERICA.

But, Mr. Chairman, I can show that I am not one of the very first. A grave has been unearthed on this continent, covered by strata of soil and geological formation which science tells us must have taken 10,000 years to form. Its hewn stone casing and inscriptions give unquestioned evidence of the chisel and the hammer. The ornaments and the kitchen Hardware, inclosed with the body, are cunningly wrought and well devised. History and poetry look for stories of great battles and noble deeds in these graves; art looks for statues and ornamental devices; neither art nor poetry will aid me in looking up the details of the Hardware business at that time, and hence I must do it for myself. This grave and the thousand other evidences of prehistoric nations point to a people who knew as much in their way as we do in ours. Evidences accumulate that nations have flourished and disappeared upon this continent so far back in time that the mind cannot conceive it. We have mummies that are older than any in Egypt. These, in turn, are antedated by other peoples long since lost in antiquity. Ages before the flood they were growing corn in Ohio and mining copper, silver and gold in various localities; they were weaving cloth, making dyes of all colors from herbs, berries and minerals. The facts revealed point to a people who filled teeth with gold and who operated for cataract in the eye—one of the most delicate attempts known to our modern surgery. If these remote people could do these things shall we suppose that they did not have the finest of tools, and that they did not know all about fashioning, tempering and polishing them? From whom should they obtain these and similar tools except from the Hardware merchant? Shall we doubt that there was the Hardware store, and that it had its sign and its imposing show window? There was unquestionably the Hardware merchant; and he was distinctively a Hardware merchant. The same man who sold

implements of war and of husbandry manifestly did not also keep doves; nor did he deal in rare needlework or art images. There was the Hardware merchant and, perforce, the Hardware manufacturer. We are obliged to admit also that there was the ubiquitous Hardware drummer.

The American nations built public works as great or greater than any known in Europe. The Peruvians had public roads 2000 miles long. Humboldt pronounced them among the most stupendous works ever produced by man. They built magnificent bridges of stone, and even invented suspension bridges thousands of years before they were introduced to Europe. In Central America and Mexico the wonderful ruins tell of a dense population. One city covers a space 6 miles in diameter. Its long avenues are lined with ruins of public building, palaces, factories, edifices and halls, in continuous lines, like our modern cities. These evidences of former grandeur cover an immense territory, including many of our Southern and Western States. One fort on the Little Miami River, Ohio, has a circuit of 4 or 5 miles, and an embankment 20 feet high. It could garrison 60,000 men with their families and provisions.

They had a chain of fortifications reaching from the State of New York across Ohio to the Wabash, and many other works of equal magnitude; yet nowhere in history can I find an ancient spade, or shovel, or wheelbarrow.

MOUND BUILDERS.

In the valleys of the Mississippi and tributaries and throughout Ohio and many other portions of this country are evidences of prehistoric man which baffle our present knowledge. Whatever the purpose of these mounds was, the fact that there are over 10,000 of them in Ohio gives some idea of the extent of the ancient people who built them. They are far more numerous in Southern localities and in the Gulf of Mexico. To have such works possible, under any circumstances, there must have been settled life with its accumulations and its organized industries. They had their manufacturers and merchants; and they used implements of agriculture, of war and of peace. No trace of their dwellings, or their factories, or their stores is left. Their circular earthwork inclosures are perfect circles, and their square inclosures are perfect squares. They are constructed with geometrical precision, which implies a knowledge of science. Implements made of copper, silver, obsidian and greenstone, finely wrought, are found in abundance. Their axes, single and double, adzes, chisels, drills or gravers, lance heads, knives, bracelets, pendants and the like, of copper; their ornaments made of silver and mica from the Alleghenies, and shells from the Gulf of Mexico, all testify to their organized industries. They had the art of spinning and weaving.

In a Minnesota mine a mass of copper

weighing nearly 6 tons has been found, which was evidently detached by prehistoric man. It lay upon a cob work of round logs or skids, the ends of which showed plainly the marks of a small axe or cutting tool, and the mass of copper had been raised several feet along the foot of the lode on timbers by means of wedges. Copper mauls, or sledges, weighing 25 pounds were also found. The whole copper region of Lake Superior shows the work of ancient miners at all the mines of any importance. Their settlements extended into Virginia, Michigan, Wisconsin, Iowa, Illinois, Indiana and Missouri. They were not ancestors of the wild Indian.

Some of the wrought ornaments of the mound builders equal in finish and beauty the finest manufactured by the ancient Peruvians. They made chain, and they had a great store of copper, flax and other rich commodities. They were in some way related to the ancients of Yucatan, Guatemala and Southern Mexico. The fact that they extended through Texas to South America indicates an exceedingly large and very populous condition in the remote past. In Central America, mostly buried in heavy forests, are wonderful ruins of great cities and temples. In Colorado and California are ruins of more permanent structures of stone, which, in their day, might have excelled the famous Pueblos of New Mexico. There was a higher degree of civilization in the ancient times than has been shown by the people of the same race there in our time. Ruins throughout North and South America display intelligence, skill and much labor. Aqueducts and subterranean reservoirs and cavernous passages show the extent of their knowledge and engineering skill.

MEXICO.

The history of the conquest of Mexico reads like a fairy tale. Our present object, however, is to reflect that these great peoples had their merchants, their manufacturers; and that they engaged in the Hardware business as we do to-day; and that if we can discover the nature and extent of their Hardware, we can, in a large measure, find out their condition and habits and their stage of civilization. The ancient graves disclose almost every article of Hardware known to us at the present day; bodkins, screws, horseshoes, shawl pins, buckles, knives, helmets, shields, tweezers, door keys, sheep shears, &c.

While it appears that in very ancient times the natives of Central America possessed copper implements for tilling the fields and knew the use of the chisel, researches show that the use of the axe and hatchet in various forms, the blow pipe, the cooper adze and the meat chopping knife are far back in time. They made nails, and they are believed to have brought the manufacture of bronze to great perfection, and are even said to have possessed the art of tempering brass.

PRIMITIVE HARDWARE.

We are on the threshold of investigations in this country which shall reveal the evidence of man on this continent so far back in the ages that our previous estimates of the development of man shall be dwarfed into insignificance. However savage his state may be assumed to have been, primitive man must have possessed implements, weapons, domestic utensils, Hardware—implements more or less rough, but still implements for cleaving wood, constructing places of shelter, carving his food, catching and preparing his fish, trapping his game and other similar uses. Man has never existed without a defensive weapon. We patiently search for these tools and implements, and our search has been and will be rewarded.

Those of us who have seen iron pipes buried in the earth return to oxides and to sand in a few years' time and those of us who wonder what becomes of all our pins can understand that through the ages that have lapsed all traces of ordinary implements of Hardware may well have disappeared again and again. Nevertheless, bones and implements have been found in certain strata of the earth, the age of which is known to geologists. Some of these long preceded the flood. The more enduring stone is naturally found where perishable Hardware of other varieties has disappeared.

BONE IMPLEMENTS.

It is evident that if we have met with the bones of the cave bear and of man in conjunction with relics of his industry, such as implements and utensils, we can assert with some degree of certainty that Hardware was known at the time of the cave bear, and that man lived in the quaternary epoch.

It is interesting to note that in diluvial beds the Hatchet and the Axe have been found—stone, to be sure, but in such perfection as to be the shape of the same article reproduced down through all the ages, until to-day we sell the same Hatchet and the same Axe, in pattern.

In a prehistoric cave in France there has been found the remains of the bear and of man, together with numerous well made implements of stag or reindeer's horn, carefully fashioned and beveled, with holes drilled therein; knives and other weapons, and the bear's tooth carved in the shape of a bird's head and drilled. This cave had a cement floor or layer of made ground of an ossiferous and vegetable character, strengthened with fragments of stone. There were also ashes and charcoal, showing the existence of a fire.

The jaw bone of the great bear, with an immense canine tooth left in place, and the whole carved, finished and fashioned into the shape of a convenient and formidable weapon, further testifies to the skill and workmanship of the people in that remote age.

During the Glacial Period man's

greatest need was fire. This he doubtless obtained by rapidly revolving a pointed stick against inflammable woods, resin or grease of wild animals by means of the bow drill.

EARLY HARDWARE MANUFACTURE.

The use of the bow appears to have been known from the beginning of time, and the bow drill of our present day appears through all the history of antiquity. The flint arrow head and the long bow are also common to mankind in all ages and in all lands. Stone implements of various kinds, and in some cases for uses which we can hardly conjecture, also appear to have accompanied man almost from his earliest stages. The varying types of these stone implements mark the date of the starting point of manufactures and the arts. We find among them flint knives, scrapers, agricultural implements and domestic utensils. We have found in this country immense beds of flint flakes, showing that these implements were made at regular factories, and the chips and imperfect implements found in these beds indicate that they were made upon a very large scale, and that there was the manufacturer and hence the merchant and, of course, the drummer. We find also the mines from which the suitable flint was extracted, and that the mines were shored up and protected with posts and lumber, to stay the earth in place, much as we do mining to-day. It is also manifest that there were varieties and different qualities of these various implements, some of them being made from the common flint, while others are made from obsidian, quartz, jasper, agate and jade.

The manufacture of tomahawks, scrapers and chisels and the skill required in fitting them to handles gave employment to large numbers of men. These men were skilled mechanics, and had all the questions of wages, hours of labor, &c., which we have to-day. Perhaps they had their labor unions. These are the primitive Hardware manufacturers.

The potter's art we are not discussing, but it also dates back to the earliest epoch of man. How soon the potter's wheel or lathe was known we cannot yet determine.

Implements made of reindeer horn, sharks' teeth, teeth of the cave bear and of polished bone are also found; while the needle, having an eye pierced at the base, was manifestly known to the cave dwellers and to earliest man. Bodkins, stilettos, saws and needles are found. The perfect flint drill, with sharpened point and cutting edge, also appears in the Stone Age. The spoon made from the reindeer's horn, and delicate instruments made from polished horn and bone; the flint saw and the chisel, the bone harpoon and the horn comb were in use by the cave dwellers.

SIMILARITY IN FORM.

These people on this continent, far back in time, have a remarkable simi-

larity to man in other parts of the world. They passed through the same periods with much the same experience in knowledge and development as in the better known countries of Europe. Their Stone Age, their Bronze Age and their Iron Age are distinctly marked. They had on this continent the same stories of the flood; the same rules of art and of architecture; the same pyramids; the same common form of arch; the same belief in immortality; the same compass; the same knowledge of astronomy; a similarity in languages and in alphabets. The plow is found in ancient Egypt and in ancient Peru; the axe of the Stone Age in Europe is the axe of the Stone Age in this country. The stone arrow head of Switzerland is the same as the stone arrow head of America.

The bronze chisel and the spear head of oldest Europe are almost identical with those of North America. Both countries knew the use of the magnet; the signs of the zodiac; and they calculated eclipses and watched the periods of the planets and constellations. The carpenters' and masons' tools of oldest Europe are almost identical with those we use to-day. Even the obelisks of Egypt have their counterpart in America. The division of time employed at Thebes was strikingly similar to that found in use in Mexico. The round towers of ancient Ireland and Scotland are the same as those in New Mexico and Colorado. Ancient Phoenician idols of the horned god Baal are the same as those found in Dakota and Peru. Coins of ancient Tyre and of Central America are strikingly similar in size and in the device thereon.

COINCIDENCES.

We find in this country mounds shaped like the elephant, yet it is known that the elephant never existed here. In ancient Mexico also idols and bas-reliefs faithfully portraying the elephant have been found.

These coincidences are mentioned to show that at various times, through vast antiquity, the old world and the new have in some way come together and have interchanged knowledge, arts, forms of government, implements of war and of agriculture.

Now, who were the venturesome and ambitious men who undertook these voyages, and what was their incentive? I answer that it was the traders, and that they sold implements of war, of husbandry, of the chase, and of the domestic life; in other words, they sold Hardware and were the drummers. They pushed out into all quarters of the earth. Hardware and civilization have gone together since the Glacial Period.

The Hardware implements found in these ancient graves record the progress of man and fix his stage in the advancement of the race. Since time began commerce has been the great educator, explorer and mover of the world, and in the forefront of these exploits is the Hardware merchant.

VULCAN.

Vulcan unquestionably had an existence in fact, and it is only the halo of time and imagination that deifies him. He was a smith, armorer and chariot builder. He made Horseshoes of brass, and was an unusually good Hardware manufacturer. (Any of us who are unusually good in our line will doubtless go down to posterity in much the same exalted memory.) He is said to have forged thunderbolts, but we Hardwaremen know that he would not make up any stock for which there was not a demand. If he "forged" at all, it suggests the anvil and heated iron; but all his products were brass and plainly locate him in the Bronze Age. His goods had a large sale on account of their quality.

Whoever was the original of the Venus of Mythology, it is plain that she needed kitchen Hardware, manure sets, and I had almost said a pocket knife, but I am in some doubt as to whether she wore a pocket.

COLUMBUS.

Recent events at Chicago have exalted the name of Columbus, but we of the trade know that Columbus was, in fact, a hardware drummer. He carried a line of pocket knives, hatchets, fish-hooks and small wares, and was seeking to extend his trade. At a dinner given by the Hardware Association, in Spain, after one of his trips, he won a wager on some quite ordinary trick with an egg. He told those people at home that he had "discovered" us. Discovered us! Forsooth! Our people worked off some coon skins and other articles with which the market was much overstocked, and induced him to give us several hawk bells for a single skin. These hawk bells were worth more to our women than all the surplus skins in the market; for they enabled them to adorn themselves with European novelties and to walk the streets of our cities in all the pride and glory of decorated beauty. Moreover Columbus died poor, as is still the custom of hardware commercial men. Many drummers from other lands had visited us before, far back in time, and many shall do it again.

We cannot help thinking of people in far countries, or in far off ages, as benighted and unused to the advantages we enjoy.

When we read of the beauty and wealth of Helen of Troy we are prone to believe that she was, nevertheless, a barbarian, and, in the absence of our modern silver plated fork, she tore her food asunder (perhaps by putting one foot on it), and in general lived and conducted herself in a very crude manner. We must rest assured, however, that her household utensils covered not only all the devices for utility and convenience known to us, but were, moreover, probably adorned and embellished with workmanship such as we rarely see.

ASSORTED SIZES.

When we read of the magnificent bronze shields and the shining helmets

of Ulysses' army we are carried away with the sublimity and poetry of the situation, but our subject for this evening is Hardware. Would it be unpoetical for me to wonder who sold Ulysses those shining helmets, and whether they originally came one dozen in a box, nested and assorted sizes, and whether the drummers who failed to get the order were blamed by their houses? May we believe that Ulysses claimed that some of the boxes were one-sixth of a dozen short or that he took off 2 per cent. when he did not pay within ten days? The license of our trade gives us the right to inquire, but poetry is silent on these points and may even take offense at our temerity.

The dawn of the bronze epoch revolutionized the Hardware trade, and hence the civilized world. The copper mines of Lake Superior and of Minnesota have manifestly been worked in prehistoric ages. Evidences of brass foundries have been found in various places upon this continent. It is already made plain that the inhabitants of North America for a long time worked the pure copper into Hardware implements. How long they did this before they discovered that an alloy of copper and tin would make bronze we do not know, but it was thousands of years. Every day, however, brings new developments, and in time the history of the Hardware trade on this continent will be unfolded.

BRONZE AGE.

The transition from the Stone Age to the Bronze Age can be read in the disclosures of the lake dwellers of Switzerland. This wonderful people lived through the Stone Age and for long ages continued on until they lapsed over into the Bronze Age. Some of their settlements disclose only stone implements, while others of a later date show the bronze chisel, the bronze winged hatchet, the bronze knife, the hexagonal hammer, the tanged knife of ornamental design, the socket knife and the bronze sickle; they show also the bronze fish hook, barbed, and in exact similitude of our present device. The ornamental hat pin, as now used, together with other articles of utility and ornamentation, are plentiful. The stone mold for casting the copper or bronze hatchet is of exceedingly ancient date, but probably the use of sand was far more common, and hence we have less traces of that method.

EGYPT.

It is a singular fact that the ancient Egyptians show no evidence of previous barbarism and gradual development, but they spring upon the world at once in a high state of cultivation. It is also remarkable that in all ancient Europe they show no evidence of having used copper before they discovered the advantage of an alloy with tin. They appear to have begun abruptly to use bronze. Is it possible that developments on this continent shall prove that the art was introduced to them by the inhabitants of this land?

TALES OF THE TOMBS.

While we grope in the dark, seeking to find the modes of living, method of work, details of trade and other interesting facts with reference to most of the ancient peoples, we are certainly indebted to ancient Egypt for its picture writing. We must be exceedingly thankful for the inspiration which caused them to decorate their tombs and all available places with those famous flat pictures of angular men and women engaged in the ordinary pursuits of life. They unfold to us a better story of their every day life than could be obtained in any other way. A painting from the tomb of Rameses III, at Thebes, shows an Egyptian kitchen, with the various processes of preparing the feast. It plainly shows our present butcher knife, the poker, pots and kettles, wash basin, various pans and bowls, soup ladles, ropes passing through rings, kitchen tables and the siphon of various sizes. The fire and bake oven quite nearly approach our modern stove, and the tray upon which the servant handed viands to the guest was the same device we use to-day. Bronze spoons and ornamental ladles of various lengths, as well as those of shell and alabaster, are found at Thebes. Small strainers or colanders also abound, and doors appear with the ordinary butt hinges and with ornamental strap hinges of our exact patterns.

BOLTS, WIRE, TOOLS, ETC.

We also find the shutter bolt like that we use to-day. Their well known skill in glass blowing leaves no doubt of their knowledge of the blow pipe and the crucible. Ancient sculptures represent the lantern, and Herodotus mentions a *fête* of lanterns which took place at a certain season of the year. They made cotton and linen cloth, which, together with mummy cloth, they manufactured on a large scale. This necessitated needles of all descriptions for the marvelous needle work they produced.

They made gold and silver wire far back in antiquity, doubtless drawing it through holes in metal plates, as we do. Wire drawing was first attempted with the more ductile metals like gold and silver, and at a much later period followed brass and iron wire. They had the flax hackle or comb, the knitting needle, spindles for weaving and the smoothing "iron" for cloth. Paintings at Thebes show the carpenter at work with the square, the bow drill and the marking awl. Others show the hand saw, the cooper's adze and the breast drill just as we use them now. Another painting shows the currier at work, between 3000 and 4000 years ago, and the circular knife he uses is precisely similar to that of our modern currier. The tools known to be in common use by the Egyptian carpenters were the axe, chisel, various kinds of hatchets, mallet, hand saw, two sorts of planes, plummet, square, rule, the hone and the leather bag containing nails. The cutting tools were

all of bronze, the blades being fastened to the handles by thongs of hide.

The bow drill is of the earliest date, and appears to have been always known on this continent as well as in Europe. The Egyptian carpenter had his tool chest, made of inlaid or veneered wood of various hues; and one painting represents an assistant spreading glue with a brush, and having his glue pot over the fire. It is noticeable that the chest handles on the carpenter's chest are of the same pattern as we use for that purpose to-day.

EGYPTIAN HARDWARE MERCHANT.

The Egyptian mummies, and these various paintings, and the mention of various writers, reveal to us to-day that these people had, in common use, the door knocker, pitchfork, flail, sickle, grass hook, plow, hoe, cattle yoke, hooped barrels and firkins, harrow, razor, hand mirrors, the comb, bellows, wooden mallets, levers, lifting cranes, door hasps, the butchers' steel, the balance scale with weights, the pole axe, forceps, try square, the wedge, and nails and tacks in variety. All these things point to the Hardware merchant and to the manufacturer of these various articles of Hardware and nails; and they open a wide realm for speculation as to their business customs, their competition, their bad debts and other details. We may wonder what manufacturer made those nails and whether the nail business was close then as now, and whether the redolent mummy would make nails again if he could return to earth to-day.

CARPENTER TOOLS.

Now as to the hand saw. It is a curious fact that the one shown on the tomb at Thebes, 4000 years ago, is the same in outline and construction as those we use to-day. How long it took for the evolution of the saw to establish that exact shape, and that particular place for the handle, we may not know; but we may well wonder that with our ingenuity and our constant endeavor to improve everything, we have never found that some other shape for the hand saw is better.

There is such an abundance of Hardware all through antiquity that I do not like to find fault; but I am struck with the fact that nowhere can I find the bolt and nut. Hence, of course, there is no ancient wrench of any kind.

Nor can I find the auger or bit, though the Egyptians had the breast drill — probably using it with any durable borer to worry out a hole, with the aid of emery or similar material. I can find no screw driver in ancient times, and no sign of the common slotted head screw.

PREHISTORIC DISCOUNTS.

It is manifest that if Vulcan could have sent to the nearest Hardware store for carriage and tire bolts, wood screws and assorted auger bits, he could have reduced the selling price of

his chariots 66½ per cent. In the absence of axle nuts also, the picture shows something that looks like a corn cob used for a cotter pin. Vulcan had to make up for the absence of these things by good workmanship and beautifully mortised joints.

Archimedes is said to have invented the screw, but he does not appear to have described it, or to have put it on the market profitably. His experiments were more in the nature of a contrivance for raising water by means of the inclined plane.

FUTURE DISCOVERIES.

America has not yet revealed her mysteries, but the similarity of man and his advancement in all parts of the world prove to us that on this continent former generations have gone through the same stages of development, and have had intercourse with other nations of the earth, and have had knowledge of their progress and industries, and we may measure America's history by the revelation of other lands.

Who shall foretell the ruined cities that shall yet be unearthed on this continent or the wonderful tale of lost nations which they shall reveal? America has not yet uncovered her Pompeii, nor has she yet dug down to the ruins of previous cities found beneath the sites of her present busy marts. Who shall look ahead until all vestiges of our present civilization are lost in futurity, and all evidence of progress in Hardware and in art have decayed, and when all traces of our literature and history have disappeared?

TUBAL CAIN.

The Book of Genesis says that Tubal Cain forged iron for all kinds of purposes, and also wrought in bronze. The fact that his name should have come down through the ages as a cunning artificer, skilled to work in brass, means a great deal. It does not mean that he discovered or invented the use of metals, but it does mean that he, in some way, represented the progress of the mechanic arts in his section, and that he was a large manufacturer whose wares were sold to such distant parts that his name has become famous in the Hardware trade, and has been handed down to us almost as a saint. His traveling men doubtless pierced to many lands; his catalogue was complete and extensive, and the name of his concern was a guarantee of the quality of the goods.

HIRAM AND SOLOMON.

Hiram of Tyre, a widow's son, is also spoken of as a worker in brass, filled with wisdom and understanding, and cunning to work all works in brass. This includes a large line of goods, and no traveling man need be ashamed to offer it in any market.

We read that King Solomon sent for Hiram; and it is probable that he placed an order for Hardware for the temple which would make us turn green with envy. Josephus gives us a copy of Solomon's order for lumber,

stating the terms of payment, time of delivery, &c., but, unfortunately, the specifications for the Hardware have not been preserved, to my knowledge.

HERODOTUS.

Herodotus speaks of a colossal basin, made of bronze, which was 60 times the size of that presented to the Temple of Jupiter Orios in Scythia. Its capacity was 600 amphoræ, and it was six fingers in thickness. In order to produce objects of this magnitude it was, of course, necessary to have large bronze foundries.

There can be no doubt that they existed throughout the Bronze Age, and that their products of various sorts have been marketed as we sell our Hardware products of to-day.

Prehistoric man was also so skilled in the melting and casting of bronze that he could travel from place to place and work at separate jobs in the villages. A hollow made in the ground was a suitable furnace, and with bellows and sand from the gutter he executed orders for metal work of various dimensions. History says he made nails and tacks and even worm screws with surprising facility. His fuel was the dry wood of the forest.

ANCIENT ART.

Hardware made rapid and magnificent strides after the dawn of the bronze era. Good designers lent their aid, and implements and weapons soon grew to be beautiful in outline and rich in ornamentation. Our best art of to-day but copies the Hardware which mankind devised long before the iron epoch began. Bronze swords, stilettoes, hatchets, paper knives, razors, combs, combs, all implements of the kitchen, agricultural implements, tools of the artisan and decorations for the house soon became not only perfect for utility, but rich and elaborate in artistic merit. The reign of man became supreme and the day of progress dawned.

PALESTINE.

It brings the subject home to us more vividly to reflect that the boyhood of our Saviour was passed in a house attached to which was a carpenter's shop. On the walls of the shop hung the socket firmer chisel in various sizes, the hand saw, marking awl, the breast drill, and other tools familiar to us. The work bench held the plane, the rule, the square, and they were substantially the same as ours.

POMPEII.

I desired to give some time to the intensely interesting disclosures of Pompeii, in the Hardware development, but the subject is too great to begin upon. I can only hastily say that in the wonderful museum at Naples we find almost everything known to our latest Hardware of to-day, and in such elegance of design and workmanship that we are lost in admiration. They show many of the implements that we fail to find in other researches, and bring the past to our very doors. They have the dividers,

the steelyard, the fine metal rule, pliers, scales, nail puller, adjustable plane, beautiful surgical implements of all kinds, including surgical scissors and forceps of various shapes, all known implements for the toilet, saddlery most elaborate, locks, keys, door knockers, masons' trowel, scythe, soldering iron, anvil, plummet, liquid measures; and every known device for the kitchen and the bath, and even the bronze stove of artistic design.

THE IRON AGE.

Some authorities claim that iron was known about 1400 B. C., others limit it to a later period—after the capture of Troy. Herodotus and Plutarch are of this latter opinion. Homer, however, mentions its use. Tubal Cain is said to have been cunning in iron; but no distinct mention of iron weapons or tools is made until after the Exodus. The Jews were acquainted with iron; and Moses mentions an iron furnace.

The difficulties of smelting the ore and reducing it to a malleable state rendered it less likely to be employed and much slower of discovery.

Who can predict the glories of the Iron Age, almost at the threshold of which we are now standing? Its magnificent achievements are already more wonderful than the tales of mythology. The forces of nature yet to be discovered will demand some accompanying development in the variety of goods we manufacture and sell. It is, indeed, a privilege to have so important a part in the advancement of civilization, which through the merchant and the salesman shall irresistibly spread to the uttermost parts of the earth. In this great work, my friends, we all have our part, and in faithfully performing it we are best serving our fellow man.

The Hardware Club of New York.

A MEETING of the Hardware Club of New York will be held in the parlors of the Cosmopolitan Hotel, corner of Chambers street and West Broadway, on Friday, December 22, at 2.30 p.m. The special object of the meeting is to receive reports from the Board of Governors as to the progress of the club, and to decide in regard to the furnishing of the rooms, which it is expected will soon be ready for occupancy. In view of the interest and importance of this meeting it is hoped that there will be a full attendance of the members.

Hardware Jobbers' Association of Pittsburgh and Wheeling.

THE regular monthly meeting of the Hardware Jobbers' Association of Pittsburgh and Wheeling was held in the offices of the Bindley Hardware Company, Pittsburgh, Pa., on Tuesday, December 12. W. C. Reitz of the Bindley Hardware Company, occupied the chair, while Mr. Fitzsimmons of James C. Lindsay & Co., Pittsburgh, was secretary. Among the concerns repre-

sented at the meeting were the Bindley Hardware Company, Logan, Gregg & Co., James C. Lindsay & Co. of Pittsburgh, Ott Brothers & Co., and Greer & Laing of Wheeling, W. Va. After some routine business had been transacted a number of communications from Hardware jobbers' associations located in New York, Rochester, N. Y., and several other places were taken up and necessary action taken. An informal discussion of the probable effects on the Hardware trade by the passage of the Wilson bill was then had, and after a full and thorough discussion of this subject, the following resolutions were adopted:

Whereas, The new tariff act known as the Wilson bill, as recommended by the Ways and Means Committee of the House of Representatives, and indorsed by President Cleveland (who urges its passage), is a direct blow to the industries of this country, which for thirty years has enjoyed under a protective system almost uninterrupted and marvelous prosperity; therefore,

Resolved, That we, the Hardware Jobbers' Association of Pittsburgh, Pa., and Wheeling, W. Va., do most solemnly protest against the passage, in its present shape, of the Wilson bill, and beg the committee to consider the depressed condition of the country caused by this unnecessary agitation.

Resolved, That kindred associations throughout the country be requested to send similar protests to the members of the House from their respective districts.

Resolved, That a copy of this resolution be forwarded immediately to Hon. John Dalzell, who so ably represents this district, for use in the committee.

Preliminary to the above meeting the members of the association assembled at the rooms of the Duquesne Club, in Pittsburgh, where a dinner was served and several hours were spent in social and profitable intercourse. The next regular monthly meeting of the association will be held in Pittsburgh, on Tuesday, January 2, 1894.

Massachusetts Hardware Dealers' Association.

THE Massachusetts Hardware Dealers' Association held their regular monthly meeting on Wednesday evening, 13th inst., at the United States Hotel, Boston. President Janvrin occupied the chair. After the business of the association had been transacted the members adjourned for dinner, at the conclusion of which the chairman introduced Professor Blish of the School of Oratory, who entertained the association with poems and humorous stories, all of which were favorably received. A. W. Parmelee, president of the Wire Goods Company, Worcester, was then introduced as the speaker of the evening, and read a very elaborate and able paper on ancient Hardware. This interesting paper is printed in full on another page. It was attentively listened to and highly appreciated, and in due course Mr. Parmelee received a vote of thanks from the members present.

The membership of the association is receiving constant accessions, fourteen

new members having been added to the roll at the meeting reported above, as follows:

THOMAS RICHARDSON, Chelsea.
JOHN M. SMITH, Lawrence.
E. P. FLANDERS, Lawrence.
M. E. AUSTIN, Lawrence.
CORYDON H. FELLOWS, Haverhill.
J. H. SAYWARD, Haverhill.
M. WARREN HANSCOM, Haverhill.
FRANK B. DOW, Lowell.
J. ADAMS BARTLETT, Lowell.
AUSTIN WHITCOMB, Beverly.
JOSEPH W. HARDING, Lynn.
J. EDWIN PRICE, East Cambridge.
J. F. PENNELL, East Cambridge.
A. J. SILBERSTEIN, Boston.

The association is thus in a very flourishing condition, and has thus far fulfilled the best expectations of its founders.

The next meeting of the association, which will also be its first anniversary, will take place on February 14, and will be designated as ladies' night.

Bicycles for 1894.

SECOND ARTICLE.

Hardware Trade.—There is a marked tendency among manufacturers to deal directly with the retail Hardware trade, instead of with agents or through jobbers; and this, it is believed, will be of mutual benefit to both manufacturer and dealer. Exclusive control of a line of wheels is likely to be given to one dealer in a place, rather than selling to all or any who would buy.

Prices.—Although manufacturers are reticent about announcing prices before the first of the year, or until their plans for 1894 are matured, list prices of high grade machines for the coming year will range from \$150 to \$100, and prices having a wider range than during the past year, it is suggested that they will probably show less fluctuation.

The Relay Mfg. Company, Reading, Pa., announce that their Relay road racer special, weighing 28 pounds, will list \$125; their road racer, 30 pounds, \$115; their regular roadster, 38 pounds, \$100, and their ladies wheel, \$100. Rouse, Hazard & Co., Peoria, Ill., will reduce the list price of their Overland from \$125 to \$100.

Weights.—The popular range of weights include machines from 36 to 19 pounds, and the lighter wheels will usually carry the higher lists.

Style.—In most cases 1893 lines will prevail, with such improvements as have been suggested by experience and which it is considered will improve the machines. There is quite a general lengthening of the upright tube from the crank shaft to the seat post, resulting in a more nearly horizontal top tube. Other minor improvements include wider bearings, crank axle brackets, &c.

Tires and Rims.—Developments are being made in tires, of which a large number of new ones are being put upon the market. The principal features claimed for these are, less liability to puncture, greater ease in repairing, and greater facility in put-

ting on and taking off of the rims. Steel, aluminum and wood rims will be used, some of the wood rims being made of one solid piece, while others are laminated, or built up of glued layers.

THE PURITAN CYCLE WORKS COMPANY. Portland, Maine, will list their machines as they did for 1893: Model A, \$150, weighing 23 pounds; Model B, \$125, a roadster weighing 28 pounds, and Model D, \$105, weighing 31 pounds. The company remark that Model D will be a first-class wheel in every respect; in workmanship and finish just as good as Model A. They will supply wood or steel rims with the Model A to order, giving riders of this machine a choice of tires, saddles, &c.; in fact, building the machine to order. In 1894 the company will sell direct to retailers, as they believe this is the way to enable retailers to pay their bills, giving them the extra discount now given to the jobber.

MCKEE & HARRINGTON, 173-175 Grand street, New York, and Lyndhurst, N. J., will make improvements in their Lyndhurst 1894 machines in several respects over their 1893 wheels. They will be made up in three heights of frame and will be fitted with wood rims. The crank axle will be adjustable on both ends to provide for alignment of gears.

METROPOLITAN CYCLE COMPANY, Reading, Pa., have raised the seat post of all their Neversink machines for 1894, and will use either Morgan & Wright or Eastern Rubber Company's tires, as desired. The company remark that they had no complaints of their 1893 frame straining, breaking or giving way in any particular, which they attribute to its construction. In this frame, they state, they get straight tensile and crushing strains, making their wheels easier riding, less fatiguing and more durable than the diamond pattern frame. They also manufacture a wheel of the Humber pattern; while they have several other styles in process of construction.

THE PEERLESS MFG. COMPANY, Cleveland, Ohio, makers of Triangle Bicycles, will have a line consisting of a full roadster, weighing 31 pounds, including mud guards and rubber pedals; a ladies' wheel, 30 pounds, including everything; a light roadster at 25 pounds and a 19-pound track racer. All these machines are referred to as being of the latest design and as strictly high grade in every feature, and, in addition, they possess some special mechanical features which would commend them to those in search of a high grade wheel. The company have put in their factory a considerable amount of improved and specially designed machinery. They have also made three additions to an already completed factory to enable them to turn out Bicycles promptly in large numbers.

H. B. SMITH MACHINE COMPANY, Smithville, N. J., will continue the manufacture of Lever Bicycles for the coming year. The line will include the special Pony Star, with solid or cushion tires; the Rover Star, with solid, cushion or pneumatic tires; the new Diamond frame lever safety, with solid, cushion or pneumatic tires; the ladies' lever Bicycle, with cushion tires; also a Diamond frame chain safety, Humber style. The Hotchkiss and Norcross Railroad Bicycles will be manufactured to order. Such slight improvements in details and tires will be added to their machines as the trade demand.

ELMORE MFG. COMPANY, Elmore, Ohio, will have for 1894 a line of El-

more Cycles, consisting of a roadster weighing 32 pounds, a ladies' wheel weighing 35 pounds, and a convertible tandem weighing 55 pounds. The company have made a few very important changes in both the roadster and ladies' wheel. The seat pillar on the roadster has been raised 3 inches, making the top tube nearly horizontal; and improvements have also been made in the handle bar and bearings. The ladies' wheel will be of the V-frame pattern. The tandem is designed as an ideal touring machine, light, attractive in design and moderate in cost, compared with the price of a single wheel.

THE MONARCH CYCLE COMPANY, Chicago, Ill., will make very few changes in connection with their line of Monarch wheels for 1894, especially in their road racer pattern and ladies' machine. The company remark that their pattern of 1893 is modern even for 1894. Their Model B will be changed in connection with the upright tube from the crank shaft to the seat post, this in future to be made straight instead of with a curve. The line includes Monarch road racer, Monarch roadster, Model A and B and ladies' Monarch.

THE ROCHESTER CYCLE MFG. COMPANY, Rochester, N. Y., will present for the selection of their agents for the season of 1894 eight different patterns, all of which, it is remarked, will be first class in every particular, containing all modern improvements, giving agents either hollow steel or wood rims and a choice of tires. They will continue making their double diamond frame, with double ball bearings, in three patterns: Rochester roadster, scorcher and high frame scorcher. In connection with these they are bringing out for '94 a complete line of single diamond frame Humber patterns, in the Rochester road racer, high frame road racer, Model A and ladies' Rochester. Among other features, the Rochester Model A will have wood rims, detachable saucer shaped drop forged sprocket wheel, bringing the chain directly over the crank axle ball bearing; crank axle of specially made steel, which will have no threads cut on it, thus adding to its strength; dust proof barrel pattern crank hanger, with ball races well separated, and Rochester pedals with covered centers. The machine complete, with tools and tool bag, will weigh 27 pounds. The weight of the ladies' Rochester, all on, will be 30 pounds.

THE YOST MFG. CO., Toledo, Ohio, will have a line of Falcon machines for 1894, composed of the Falcon road wheel, listed at \$100 to \$115, according to handle bar and tire used; the Falconess, for ladies; Falcon Junior, 24 and 26 inch, and Falcon Junior combination, 24 and 26 inch. Especial new features will include the Yost metallic fastened tire; the Cable adjustable handle bar, which can be thrown to any angle desired without the aid of a wrench, and can be changed so as to give either an upward or a downward turn; and a chain adjusting device. The machines will have long steering head, tapered front forks and large dust proof bearings. After exhaustive experiments the company have adopted larger balls throughout the bearings in their wheels, as this is found to lessen the friction very materially. All bushings and cones are cut from a solid bar of cold drawn steel and after being properly hardened are polished smooth to size by special machinery.

ROUSE, HAZARD & CO., Peoria, Ill., have absorbed the Rouse-Duryea Cycle Company, and will manufacture the Sylph, which has heretofore been made by the latter company. The Sylph has been greatly improved for 1894 and will be made in 30, 28, 26 and

22 pound weights. They are to be of the highest grade in every particular, and more attractive in design and finish. The Overland, made by the company, will be improved but slightly, as it gave perfect satisfaction during the past year and is considered thoroughly up to date. The list price of the Overland will be reduced from \$125 to \$100. The company will continue to make a specialty of the sundries of all kinds which they have handled many years. Their special bargain department will also be continued, and they will offer dealers Bicycles at greatly reduced prices as in years past. The company have been assigned large exclusive territory on the Western Wheel Works line of Bicycles, which goods they have handled for the last 14 years. These goods have heretofore been sold indiscriminately through numerous jobbers or any dealer that cared to handle them. But one agent in a town will now be appointed, to whom will be given the exclusive control of the line.

RELAY MFG. COMPANY, Reading, Pa., will list their Relay wheels for 1894 as follows: Road racer, special, 28 pounds, \$125; road racer, 30 pounds, with new chain adjustment features, \$115; regular roadster, 38 pounds, with brake attachments, \$100; roadster, stripped, 35 pounds, \$100; ladies' wheel, with a very low frame for easy mounting, \$100. The road racer special has a specially constructed crank axle bracket of new design entirely dust proof, the diameter of which is in keeping with other proportions of tubes of the frame. Another feature is that which allows the rear wheel to be taken out without taking the chain apart. Riders who have handled an oily, dirty chain on the road in order to remove a rear wheel, it is remarked, will appreciate this improvement. It also does away with the rear fork adjusting screws. The frame has been heightened, bringing the top tube nearly horizontal. There has also been introduced an entirely new principle of crank axle bracket, very wide in the bearings, yet without increasing the tread, and which will be oil containing. The company intend giving with every Relay gratis the Century Cyclometer, which they consider the most compact, simple and best.

Trade Items.

THE traveling representatives of the Reading Hardware Company, Reading, Pa., recently held their annual convention in the offices of that firm in the above named city. Among those present at the convention were W. H. Bennet, in charge of the Chicago branch office; Orton Hill, who looks after the trade in the Northeast; W. A. Kerr, who is in charge of the Southwestern trade; Fred. L. Stellwagen, New York; F. B. Henderson, Philadelphia; Isaac M. Rhodes, who looks after the Middle States, and W. E. Bartholomew of the Pacific Slope.

THE inactivity in the building trades, as well as difficulty in collecting on outstanding accounts, is causing havoc in the ranks of those who handle building materials and house furnishings. The Henry Dibblee Company, 150 Michigan avenue, Chicago, an important concern in this line, failed on the 13th inst., having confessed judgments to the amount of about \$35,800. The amounts claimed by the creditors separately were: The Northwestern National Bank, \$15,939; A. A. Sprague, O. S. A. Sprague, C. H. Morse, and A. C. Bartlett, \$11,160; Silas A. Barton, \$7561, and Mrs. P. McDowell, \$1062. The company made a specialty of high class mantels and grates.

THE CHICAGO STAMPING COMPANY, 227 to 231 South Green street, Chicago,

announce the appointment of W. L. Goodrich to the entire charge of their city and country sales. Mr. Goodrich has been connected with the Metal and Tinware trade for the past 25 years, and has a very wide acquaintance throughout the Hardware interests of the Northwest.

WE WOULD COMMEND to the attention of manufacturers who are desirous of making arrangements for the representation of their goods to the trade the announcement among the Special Notices in this issue signed "W. S. G.", a gentleman who has a wide acquaintance with the trade and is desirous of obtaining one or two agencies in addition to those of manufacturers whom he is now representing.

JOHN H. BAIRD, who represented the Jos. Dixon Crucible Company of Jersey City, at the World's Fair, has published a charming little brochure giving his reminiscences of the exposition. Mr. Baird is of a poetic temperament, and has been deeply impressed by the greatness of the fair, so that the vigorous prose in which he has clothed his thoughts glows with enthusiasm. The many friends of Mr. Baird will value this work as a memento of his personality as well as a souvenir of the exposition itself.

THE RAZORINE MFG. COMPANY, 2 West Fourteenth street, New York, have prepared card stands upon which are fastened a dozen cakes of Razorine for advertising purposes. Above the packages is printed matter calling attention to the merits of the preparation and announcing that by its use the dullest razor can be sharpened. The company are prepared to offer liberal inducements to merchants to insure the more rapid introduction of this specialty.

MUDGE & BENJAMIN is the style of a firm which has recently entered the Hardware and House Furnishing Goods business at Olean, N. Y. They will give particular attention to retailing, but will also, they advise us, conduct a wholesale business. The new firm will be glad to receive catalogues, circulars, &c., from manufacturers and importers.

A NEW HARDWARE STORE has just been opened at Beeville, Texas, by Burrows Bros., who will conduct it in connection with their establishment at Rockport, Texas.

IN A LARGE FIRE at Syracuse, N. Y., on December 8 the large and well-known wholesale Hardware house of Robert McCarthy & Son was burned out. The entire stock, as well as the building, was destroyed. The loss is estimated at about \$70,000, which is very nearly covered by insurance. The present year completed Mr. McCarthy's forty-eighth year in business. Mr. McCarthy is referred to as not only the oldest active merchant in Syracuse, but the oldest merchant as well. We are advised that as soon as arrangements can be made the business will be continued.

R. S. THOMPSON, senior member of the firm of R. S. Thompson & Son, Pine Bluff, Ark., died on December 5. On the previous evening Mr. Thompson was suddenly attacked with heart failure, from which he never completely rallied, though he was conscious until a short time before his death. The business of the firm will be hereafter conducted by R. C. Thompson.

JOHN D. WARREN of Burlington, Iowa, who has been connected with Simmons Hardware Company, St. Louis, for a number of years as a salesman, has established the Manufacturers' Distributing Company, with

headquarters at Chicago. Under his charge will also be the output of a Burlington factory, of a distinctive line of shelving, together with a catalogue case, cabinet and desk combined, which embody ideas resulting from years of travel and observation as to what is best suited to the requirements of Hardware merchants.

THE BILLINGS & SPENCER COMPANY of Hartford, Conn., have opened a Western office at 59 South Canal street, Chicago, Ill., in charge of W. A. Davis. A complete line of all their goods will be shown there.

THE JEFFREY MFG. COMPANY, Columbus, Ohio, have ready for distribution a complete catalogue, showing full size illustrations of every Chain Link made by them. It also includes a complete price-list of their specialties and will be of value to users of material in their line.

THE PHILADELPHIA BRANCH HOUSE of Jenkins Bros. will shortly remove from their present address to 117 North Fourth street.

BRONSON SUPPLY COMPANY, 72 Beekman street, New York, have been offering special inducements, which hold good until December 31, to merchants on season goods suitable for holiday and regular trade. They selected five leading sellers from the production of their several companies and have made the price extremely low. Two are of their Seamless Steel Never Break Ware, a brass Umbrella Holder of the Ideal specialties, one from the Puritan line of cooking utensils and a baking and roasting Pan of the Excelsior kind. They direct the attention of the trade to the plan and refer to it as producing satisfactory results.

THE BILLINGS & SPENCER COMPANY of Hartford, Conn., have disposed of their interest in the Spencer Nail Puller. In future any information regarding this device may be obtained by addressing C. M. Spencer, Windsor, Conn.

THE HARDWARE AND CARRIAGE MATERIAL BUSINESS formerly carried on by the firm of Chas. Wing & Co., Amesbury, Mass., is now being conducted under the style of the Chas. Wing Company. Wm. W. Hawkes is president and treasurer of the new company and Chas. A. Steere secretary.

Hermann Boker & Co.

HERMANN BOKER & CO., 101-103 Duane street, New York, have completed arrangements for the marketing of several new lines of goods. One of these will be the Screw Drivers made by Augusta Machine Works, Augusta, Maine. The assortment consists of 28 styles and sizes, including the patterns known as New York Nos. 1 and 2, handy, plain, ratchet and spiral. Another line will be that of Wm. Wilkinson & Co., Reading, Pa., makers of American Sheep Shears. These include Hand Forged, Solid Steel and California patterns, and also Grass, Horse or Mule and Hedge Shears. They are prepared to make special patterns in suitable quantities, stamped any brand to suit customers. In addition to the above Messrs. Boker & Co. also have

the agency for Johnson & Bro. Files. For all the above goods they are sole agents in this country, Canada, and for foreign markets, and control the entire product.

Price-Lists, Circulars, &c.

HULBERT BROTHERS & CO., 26 West Twenty-third street, New York: Seasonable goods for fall and winter. Circulars illustrate single and double Chest Weights, Fencing Foils, Venetian Bent Iron Work, Torkelson Double Barrel Hammerless Breech Loader, Hopkins & Allen Acme Hammerless Double Action Revolvers, &c.

THE J. D. SMITH FOUNDRY SUPPLY COMPANY, Cincinnati, Ohio: Supplementary Catalogue No. 16. A full line of Monk's Molders' Solid Steel Tools are shown, including a number of the latest shapes and sizes of handy tools, suggested by practical molders. Illustrations of the goods are accompanied by descriptions and prices.

CENTRAL ELECTRIC HEATING COMPANY, 26-28 Cortlandt street, New York: Electric Heating apparatus for cooking, and for domestic and industrial purposes generally, and for heating cars, buildings, steamships, &c. Illustrations are shown of Portable Heaters; Laundry, Tailor, Hat Irons, &c.; Soldering Copper, Ovens, Clothes Boilers, Spiders, Chafing Dishes, Farina Boilers, Stew Pans, Tea Kettles, Tea and Coffee Pots, Coffee Urns, &c. An illustration represents an electric kitchen, showing Electric Cooking Utensils in use. Each article or utensil is connected to a separate electric wire, so that electricity for generating heat may be turned on or off at pleasure.

NORTON DOOR CHECK AND SPRING COMPANY, Charles S. Penhallow, treasurer, 505 Sears Building, Boston: the Norton Door Check and Spring. The device is described in an illustrated circular. It is explained that the parts of the device are so arranged that the greater the force exerted to close the door the greater resistance will be offered, consequently no slam or jar can occur.

BRYDEN HORSE SHOE COMPANY, Catawissa, Pa.: Boss Horse and Mule Shoes. A neat memorandum book bound in celluloid and leather for 1894 is being distributed by the company. Any customer of a merchant who is a horseshoer can obtain one of these books, it is announced, by sending his address to the factory.

THE STANDARD LIGHTING COMPANY, Cleveland, Ohio: 1894 calendar. The company issue a tasty calendar. Attention is directed to their New Process Vapor Stove, which is among the most prominent of their manufactured goods.

THE CLEVELAND STAMPING & TOOL COMPANY, Cleveland, Ohio: Solid Steel Seamless Hollow Ware. An illustrated price-list shows Spiders, Grids and Broilers in this ware. In addition to these goods the manufacturers press, cut, stamp and draw all kinds of sheet metal into all kinds of shapes, and make all kinds of dies and presses. Prices will be made on articles to be made or on machinery to make them by the company.

WABASH ANTI-RATTLER COMPANY, Wabash, Ind.: I.X.L. steel anti-rattler and superior wire anti-rattler. An illustrated circular describes the wire one as being shaped so as to be easily put in place; and the steel one as possessing the same advantages. Both styles are packed in quarter gross pair boxes.

S. C. JOHNSON, Racine, Wis.: Wrought Steel Center Neck Yoke. Pamphlets, with illustrations, describe the Center as being made of sheet steel stamped into form, allowing it to be bent under great pressure, but not

broken. The Centers are furnished separate or the Yokes complete.

THE WISCONSIN REFRIGERATOR COMPANY, Eau Claire, Wis.: Illustrated catalogue and price-list for 1894. A pamphlet of 36 pages bound in stiff paper covers describes the Wisconsin Peerless, hard wood, dry air household Refrigerators, Ice Chests, grocers' hotel and butchers' sectional Refrigerators, sideboard Refrigerators, &c. The general construction of these Refrigerators is thoroughly explained and sectional cuts are given showing how the walls and flues are arranged and the manner in which the air is kept in constant circulation in the interior. Stress is laid on the use of mineral wool filling and its high rank as a non-conductor of heat. The ice rack is made of galvanized steel beams to prevent the rack from bending or sagging, the lock brings the door to a tight joint automatically, and the drip cup has an extension pipe which brings the drip water to the front of the Refrigerator, so that the pan is always in plain sight. The styles of Refrigerators illustrated comprise a very great variety of pleasing patterns, the sideboard constructions being particularly attractive. Allusion is made to the selection of the company's Refrigerator by the United States Government for exhibition in the National Museum of Hygiene, at Washington. The demand for their goods has been so great that each year since 1891 they have been obliged to enlarge their plant and increase their productive capacity.

J. M. Warren & Co.

THE WAREHOUSES of J. M. Warren & Co., Troy, N. Y., were badly damaged by fire on the 14th inst. The warehouses are 50 x 80 feet in dimensions, one being five stories high and the other six stories high. The fire originated on the fifth floor of the latter building. The roofs of the warehouses were entirely consumed, and the two upper floors of one building and the top floor of the other were very badly burned, the stock in these lofts being a total loss. The fire also destroyed a bridge connecting one of the warehouses with the firm's main building, in which the store and office are located, and which is five stories in height, 50 x 80 feet in dimensions. When this bridge was destroyed by the flames it was feared they would communicate with the main building, but by vigorous work on the part of the firemen this was avoided, the loss in the store building being one of water only. The lower floors of the warehouse were, of course, thoroughly saturated with water, which makes the firm's loss very heavy, but not accurately known at the present time. The entire loss is roughly estimated at \$100,000, which, it is thought, is almost covered by insurance. The condition of the buildings and stock is such that the firm are necessarily inconvenienced very much at present, and it may be a few days before they will be able to resume their business in full, but as their main building is intact and the goods only damaged by moisture they hope within a week at least to be in good running order. J. M. Warren & Co. are the oldest Hardware firm in Troy, the original business having been founded by Jacob Hart and Henry Nazro in 1809. The firm style was changed to Hart & Pitcher in 1821, and in 1834 became Craft, Hart & Pitcher. Mr. Craft retired in 1830 and was succeeded by Hart & Pitcher. The following year the firm of Pitcher, Hart & Card was formed. They were succeeded by Hart, Lesley & Warren in 1836. Joseph M. Warren became a partner in 1840, and the name was changed to Warren, Hart & Les-

ley. In 1855 Mr. Warren and Charles W. Tillinghast succeed to the business under the name of J. M. Warren & Co. Walter P. Warren was admitted to partnership in 1864, as was also Thomas A. Tillinghast in 1867. Walter P. Warren withdrew in 1871, while Thomas A. Tillinghast died in 1879. In 1870 the firm erected the handsome structure they now occupy. The present organization were incorporated in February, 1887.

Foreign Correspondence.

THE following communication, which refers to the practice of sending catalogues in English to Spanish speaking countries, is from a gentleman who has recently returned from a trip through South and Central America. The suggestion is deserving of attention:

It should interest Hardware manufacturers in the United States of America to learn that much time and money are wasted by sending trade circulars, catalogues, &c., printed in English for circulation in South and Central America, where Spanish is the language of commerce, as of the people. This fact has been already noted and promptly acted upon by the leading manufacturers of Europe, whose circulars and other advertising matter are read and attended to, while those of their North American rivals, published in English, often find a resting place in the waste paper basket. Being unintelligible, they are uninteresting,

The writer speaks from an experience gained in many miles of travel through those countries, and not being in the Hardware line he can afford to give the tip gratis.

As bearing on this subject it is of interest to know that the export agent in this city for a number of American agricultural implement makers, perceiving the necessity of having within the limits of his office facilities for at once ascertaining the contents of the constantly increasing number of foreign letters from many sections of the globe, has secured the services of a stenographer-typewriter who is equal to the translation either way of anything in English, German, French, Spanish, Italian and Hungarian. Such letters on receipt are submitted for translation, and a typewritten copy is made, which is attached to the original. This insures expedition and the keeping of business secrets among trusted employees, besides minimizing errors, as the work is done by one who is familiar with the office's customs and history. While, at the same time, such answer as is made is given in the native language of the party to whom it is addressed. This must be of much advantage to him, for it must be remembered that comparatively few cities are as cosmopolitan as New York, and abroad it is not so easy to get translations, especially in smaller towns. Many foreign merchants for obvious reasons much prefer to read their communications first themselves, especially if customs and other questions are involved. A little thought will make it plain to those doing an export trade how much more can be accomplished by sending letters, circulars, invoices, catalogues or

any class of literature of this nature when feasible and practicable in the language of those who are expected to read it. Many are following this method, and many have done so for years, but the more this plan is extended the better will be the results.

Trade in Australia.

ADVICES which have recently come to hand indicate that a moderate improvement has taken place in Australian affairs, and late mails are bringing somewhat better orders. While there is nothing marked in this direction, the situation has apparently cleared considerably, and the Australian people are realizing more and more that the real wealth of the country must largely come out of the ground in the way of crops or minerals. This conviction is inducing many to leave centers of population, such as Melbourne, Ballarat and Bendigo in Victoria, which have a population approximately of 525,000 souls in a total population for that colony of about 1,000,000, and turn their attention to tilling and developing the soil. While the collapse there was very severe and will doubtless take years to repair, it is thought that everything is on a sounder and healthier basis, which will ultimately greatly benefit the colonies. The present wool clip is believed to be the largest ever taken, and is estimated to be worth £20,000,000. This fleece, owing to the equable climate, is said to be of very fine quality and indispensable for blending with other wools in the production of fine cloths. Should tariff changes here result in placing this important staple on the free list it would be of great assistance to the Australian colonies from the fact that it would provide a broader market and enhance the price. At present this product goes almost exclusively to England, as do the greater portion of their other exports, which include hides, fruits, wine, butter, tallow, &c.

Another phase of the question is, as presented by exporters, that should this product be brought here largely it would provide return cargoes for vessels from this country, taking out raw materials and manufactured goods, which would not only enlarge our market but have a tendency to modify freight rates. Vessels could then be chartered at a lower rate, if assurance were given of a cargo back, instead of either lying there for weeks or going elsewhere for freight. The present crop of wheat, which is now being garnered, is very large and promises well. The output of gold from the mines is also said to be greater than formerly, it has been the custom heretofore to settle the large balance of trade against the colonies with borrowed capital, drawn largely from Great Britain. As this resource has been curtailed, the only way to compensate for the loss will be to cultivate and raise more. Large amounts of money are tied up by the process of liquidation, owing to the system on which loans have long been made. This will require from two to six years, and in extreme cases much more time. Great amounts have long been advanced on station (synonymous with our word ranch) and similar property, which will take time to turn over except at great sacrifices. Another sign which is regarded as favorable to the future welfare of Australia is the recent floating of loans in Victoria, New South Wales and Western Australia, aggregating £5,000,000.

in round figures, at from 1 to 3 per cent. above par.

It Is Reported—

That the Hardware store of Brindley, Drennan & Co., Swanton, Ohio, was burglarized on the 4th inst. About \$25 worth of goods were taken.

That the Hardware dealers of New Albany, Ind., have donated to that city a supply of Picks to be used in the street repairs.

That William Jenkins' Hardware store, at Oxford, Mass., was robbed on the 31st inst. Razors and Pocket Knives comprised the booty.

That John Holker has retired from the firm of William Holker & Co., dealers in Stoves, House Furnishing Goods, &c., Newburyport, Mass., and William Holker will hereafter conduct the business alone.

That J. M. Schram's Hardware store at Ridgway, Pa., was destroyed by fire on the 12th inst. Loss, \$7000; fully insured.

That the Hardware store of A. M. Churchill, Morrisville, Vt., was slightly damaged by a fire in that place on the 13th inst.

That a newsboy, while attempting to sell a paper in S. L. Boyce & Son's Hardware store at Port Huron, Mich., on the 9th inst., entered the office during the bookkeeper's absence, and unlocking the money drawer of the safe, abstracted a pocketbook containing \$40. The boy was subsequently arrested.

That F. A. Beltz, Boyd, Minn., has sold a half interest in his Hardware store to P. Golden.

That in the tornado which visited Harrisburg, Ill., on the 15th inst., the Hardware store of J. S. Ferguson was unroofed.

That A. F. Anderson has bought the Hardware store of H. S. Rich & Co., Red Wing, Minn.

That M. M. Davidson has sold his Hardware stock at Tipton, Iowa, to William Muhs of Milwaukee. Mr. Muhs will take possession the first of the year.

That on the 12th inst. fire destroyed the Hardware store of Bartlett & Mallott, Groton, S. D. Loss on stock, \$7000; insurance, \$4500; loss on building, \$2000; insurance, \$1400.

That D. Thompson has bought A. H. Nichols' Hardware store, at Marlette, Mich.

That U. P. Solberg has purchased a new Hardware store at Sioux Center, Iowa.

That A. L. Johnson's Hardware store, at Blaine, Wash., was burglarized on the 5th inst. The thieves broke in the side window and carried away about \$100 worth of Pistols and Cutlery.

That V. P. Moore, Adairville, Ky., has sold a half interest in his Hardware store to Morris Barker of Keyesburg.

That J. W. James has sold his Hardware store at Point Pleasant, Ohio, to Hoopman Bros. of Byesville. Possession will be taken January 1.

That Steer & Church, Coleman, Mich., have purchased S. S. Tower's stock of Hardware and removed it to their store.

That Mr. Yost has recently entered the Hardware business at St. Louis, Mich.

That F. C. Dickson has leased the Weyh Building, Armour, S. D., and

will put in a complete stock of Hardware. Mr. Taylor, a nephew of Mr. Dickson, will have charge of the store.

That Grate Bros., Hardware merchants, Carondelet, Mo., hope to have their new brick store completed by the first of the year.

That Huddle & Shoemaker, Ashley, Ohio, have sold out their entire stock of Hardware, Farming Implements, &c., to Wesley McCurdy and John Olds. The firm name will be Olds & McCurdy.

That the Hardware firm of Godley & Watson, Oberlin, Ohio, was dissolved on the 4th inst., and a new partnership formed. Mr. Godley purchased the half interest of Mr. Watson and subsequently sold it to David E. Morris, the firm name becoming Godley & Morris.

That R. W. Maben of Garner, Iowa, has traded his stock of furniture for a stock of Hardware in the southern part of the State.

That the Hardware firms of C. S. Bucktel and S. G. Empey, Tobias, Neb., have consolidated, and will hereafter be managed by C. S. Bucktel. A part of both stocks will be moved to Swanton, and a branch store opened there.

That Baily & Storch, Hardware merchants, Fullerton, Neb., have purchased the Hardware stock of Sprague Bros., Belgrade, Neb., and will conduct it as a branch store.

Paints and Colors.

In the wholesale branch of the trade interest has centered largely upon what may happen after the turn of the year. The natural tendency is to look for something since competition in certain lines is more formidable than it was a year ago, the cost of some varieties of base material lower and the outlook darker for manufacturers who may endeavor to arbitrarily maintain prices. Actual business is commonplace in the strictest meaning of the term. There is practically nothing doing in round lots of goods for future delivery, and spot dealings are practically of a retail character. There is no sign of speculation in any line of goods. In fact, the only speculation is mental, with the possible action of the National Lead Company the center of gravitation.

White Lead.—There is virtually no market at present. What does exist as apology for a market is a very poor affair. It is retail in character, small at

tone. Foreign brands sell at somewhat irregular prices in jobbing circles, but importers quote the old list and discounts.

Colors.—Dry Colors of all descriptions have met with limited sale during the past week. Oil Colors are not offered as freely as they were at the time that the price of Oil was down to 38¢ @ 40¢.

Oils and Turpentine.

Features of distinctly new character have not materialized. A certain amount of curiosity still centers around Linseed Oil, owing to the further rise in cost of raw material, and the movements in price of Lard have served to excite at least livelier curious interest in Lard Oil and Cotton Seed products. However, it does not appear that much business has been brought about in any of the respective lines. Other branches of the market have experienced the tameness that is common at this season of the year, and prices have undergone but little variation.

Linseed Oil.—At the higher prices established last week merely a routine business has been done.

Cotton Seed Oils.—From the extreme lowest prices touched last week there has been a recovery of about 1¢ on prime Crude and prime Summer Yellow, with partial reaction on the lower grades. Business has been moderate and the demand has continued tame.

Lard Oil.—High grade stock holds its own remarkably well, city brands going at 72¢ @ 73¢ and Western at 1¢ @ 2¢ less. The lower grades have not fared as well in point of movement and do not bring relatively as good prices.

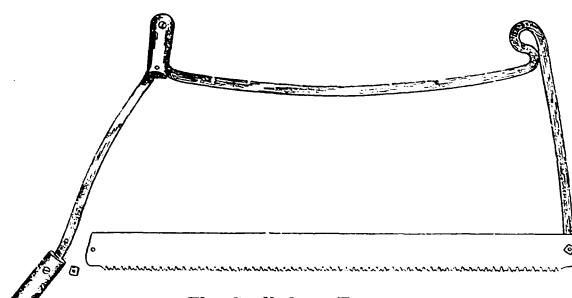
Fish Oils.—Little, if anything, more than routine business in crude Sperm, Whale or Menhaden Oils have been effected. The Pressed and Bleached products have also been quiet and without important change in value.

Mineral Oils.—The general features of the market are without noteworthy change. Paraffines and cylinder stocks are in good demand, especially for export. For higher cold test Black Oils there is a fair inquiry, and neutral filtered are in moderate request. Prices are unchanged.

Spirits Turpentine.—It has been what may fairly be termed a very even market. Late dealings were at 29¢ for regular and 29½¢ for machine barrels.

The Snell Saw Frame.

Butler Mfg. Company, Boston, Mass., are offering a steel frame for wood saws as herewith shown. The spring in the



The Snell Saw Frame.

that, and affected at all manner of prices.

Red Lead and Litharge.—The quiet condition of affairs that prevailed a week ago exists at the present time.

Orange Mineral.—Foreign sorts are a trifle irregular in price. American is unchanged and very slow of sale.

Zincs.—While prices are not quoted lower by manufacturers, the market for American Oxide shows rather weak

frame, it is stated, brings from 80 to 100 pounds tension on the blade, making it impossible for the blade to double or to break. The frame is fitted with wooden handles, and, it is remarked, has little weight, but just enough to make it work fast; that a large log can be sawed through without coming in contact with the frame, and that it will last the purchaser a lifetime.

Vest Pocket Magazine Camera.

Magic Introduction Company, 321 Broadway, New York, are just marketing a vest pocket magazine snap shot nickelized camera, as illustrated in Figs. 1, 2, 3 and 4.



Fig. 1.—Vest Pocket Magazine Camera, Three-Quarter Size.

1, 2, 3 and 4, which they have named Photoret. As will be seen in Fig. 1, it takes the form of a watch. It is $2\frac{1}{8}$ inches across the face and $\frac{1}{4}$ inch thick. Its convenience and portability make it possible to carry it about the person, ready for use in an instant to catch any desired view. The negatives can be developed and printed by the individual, the Magic Introduction Com-



Fig. 2.—Sectional View, Indicating One Complete Revolution and Six Exposures.

pany, or any professional, at the option of the operator. By a simple device snap shots, or time exposures, can be taken at will. It is not the intention here to minutely describe the method of operation, the company having issued a primer of 32 pages covering the whole subject, which can be had on



Fig. 3.—Sectional View, Showing Camera with New Film Ready for Six Exposures.

application. Fig. 1 shows the general appearance of the Photoret. The lens, which is protected by a brass shutter, is just back of the large black spot. A film having been placed in the camera, by pressing the stem push button, the shutter is made to expose the film. Time exposures are obtained by inserting a pin or similar piece of metal in the small hole over the words "time stop," which permits the time to be regulated. Fig. 2 illustrates the manner in which the fact that the camera is unwound and ready for a new film is

indicated. Every time an exposure is made it is automatically recorded by numbers 1 to 6 engraved on the film holder, which shows through the aperture. Fig. 3 shows that the camera has received a new film and is ready for use. Fig. 4 illustrates the way in which the goods are sent out. A round metal film box, $2\frac{1}{4} \times \frac{1}{4}$ inches in size, is divided horizontally in the center. Each side has a metal screw cap, and the separate compartments are for fresh films and those already used. The caps are suitably labeled and to prevent confusion are not interchangeable. The

laced dress guards. The tread is 6 inches and the machine is geared to 56 inches unless otherwise ordered. The weight of the whole is 30 pounds. The following are optional: Loop seat post, 59 or 62 gear, color of rims and Rochester regular drop bars.

Boys' Lightning Skate Sharpener.

The cut herewith given represents the Boys' Lightning skate sharpener, put on the market by the Sandwich Novelty Company, Sandwich, Ill. The sharp-

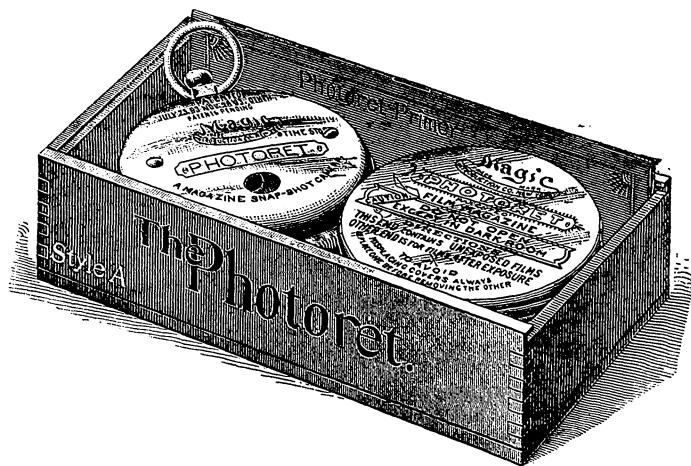


Fig. 4.—Box Containing Photoret and Film Magazine.

camera and film box, with primer, giving full directions, are packed in a neat varnished, dovetailed wooden box, with slide cover, the extreme dimensions of which are $5 \times 2\frac{1}{4} \times 1\frac{1}{8}$ inches. The negatives obtained are a little over half an inch square, while specimen enlargements up to $3\frac{1}{2} \times 3\frac{1}{2}$ inches are shown in the printed matter issued by the Company. Various sets of supplies are sent for any who wish to complete the detail of making a picture.

ener has in combination a skate key and wrench, all made of malleable iron, and referred to as light, strong and durable. It is remarked that the files are of the best hardened steel, that they are square, with four sides available for use, thus lasting a long time, and that when worn out

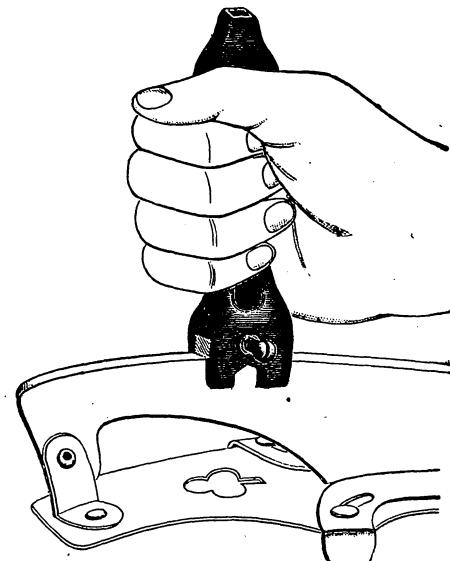
Ladies' Rochester Safety.

Rochester Cycle Mfg. Company, 75 South St. Paul street, Rochester, N. Y., are putting a ladies' safety on the market, as illustrated herewith. The wheel has a frame of weldless steel tubing and steel drop forgings. The wheels are 26-inch front and rear, fitted with wood rims, drawn tangent spokes enlarged at both ends and nipples of hard brass. Pneumatic tires $1\frac{1}{2}$ inch are used; also $\frac{1}{4}$ -inch handle bars tapered to $\frac{1}{4}$ inch, of the raised pattern, fitted with cork handles and Sager ladies' saddle. The



Ladies' Rochester Safety.

machine has special tool steel round detachable cranks, 6 inches long; $\frac{1}{4}$ -inch hardened block steel chain; plunger brake to front wheel and 11-inch ball bearing steering head. Tool steel ball bearings are supplied to all parts; metal guards to rear wheel and chain; also



Boys' Lightning Skate Sharpener.

they can be replaced at slight expense. The manufacturers claim that with the sharpener a boy can put the dullest pair of skates in fine shape in from 3 to 5 minutes.

John G. Rollins & Co., 4 Stone street, New York, and Old Swan wharf, London, are introducing into this country a carbon for arc electric lights, which they refer to as being of high grade and superior in quality. They are made of a peculiar grade of coke obtained in Europe, the source of supply, it is claimed, being controlled by the manufacturers for whom they act.

Myers' Sure Grip Hay Sling Carriers.

The accompanying cuts represent hay sling carriers, put on the market by F. E. Myers & Bro., Ashland, Ohio. Their object in the construction of this machine was to make a device that would have unusual capacity for unloading hay, sheaf grain, corn fodder and all kinds of crops, by using what is termed a sling in the wagon whereby the load is divided into three or four bundles as the operator may desire, or its construction is adapted to the use of two hay forks, one on each pulley block, as shown in Fig. 1. By removing one pulley block, as in Fig. 2, it may be operated as an ordinary hay carrier with one hay fork. The pulleys are arranged with loose pins, so the block may be easily removed. It is explained that to make a carrier that will answer for these different methods of unloading hay and grain requires a lock that will register and retain any sized bundle at any point of elevation. The machine was therefore constructed with a rope lock, which is accomplished by tilting the pulley in the carrier, allowing the rubber block to remain in a fixed position, as shown in Fig. 2. It is stated that when the carrier is retained in the stop while elevating the bundle the working parts are perfectly free, but that the instant the pulley blocks strike the depending bail, or are tripped by the hand trip, and the carrier moves away from the stop the weight of the load causes the rope sheave to travel back against the rubber block, gripping the rope firmly and retaining the bundle. It is also stated that the operation of retaining the bundle is a self-compensating device, and additional load means additional power with which to retain it, making a positive and reliable lock for retaining any sized

mow, in barns without cross timbers, immediately after it is elevated | depending arm, whereby the operator in the wagon has full control to release

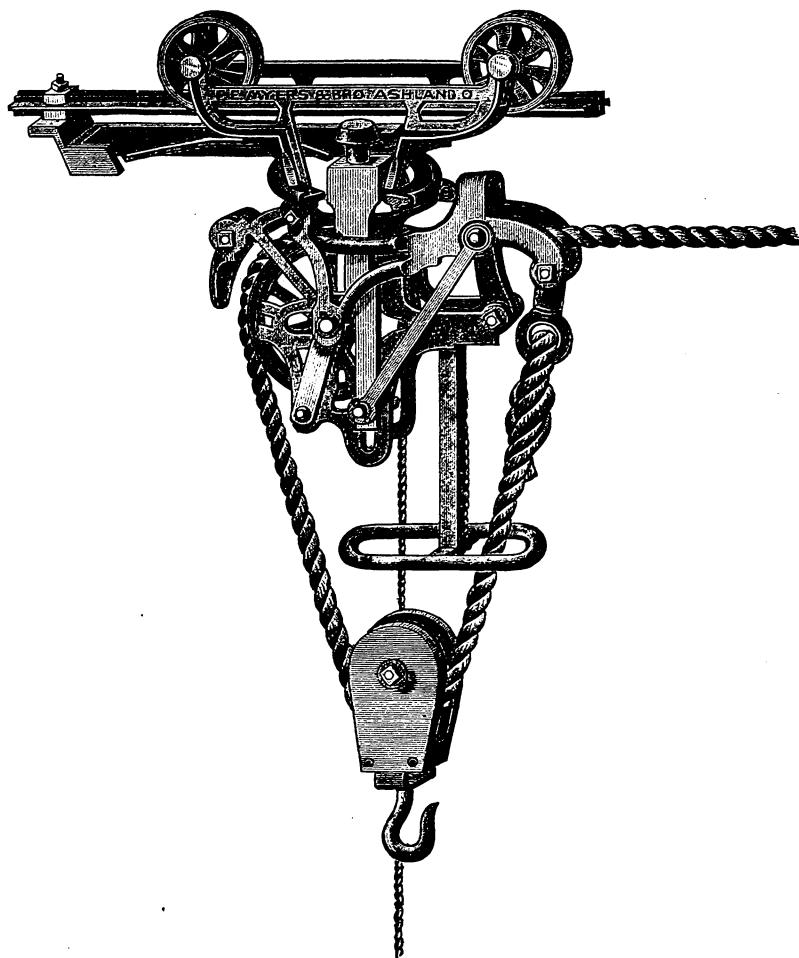


Fig. 2.—Hay Carrier No. 496.

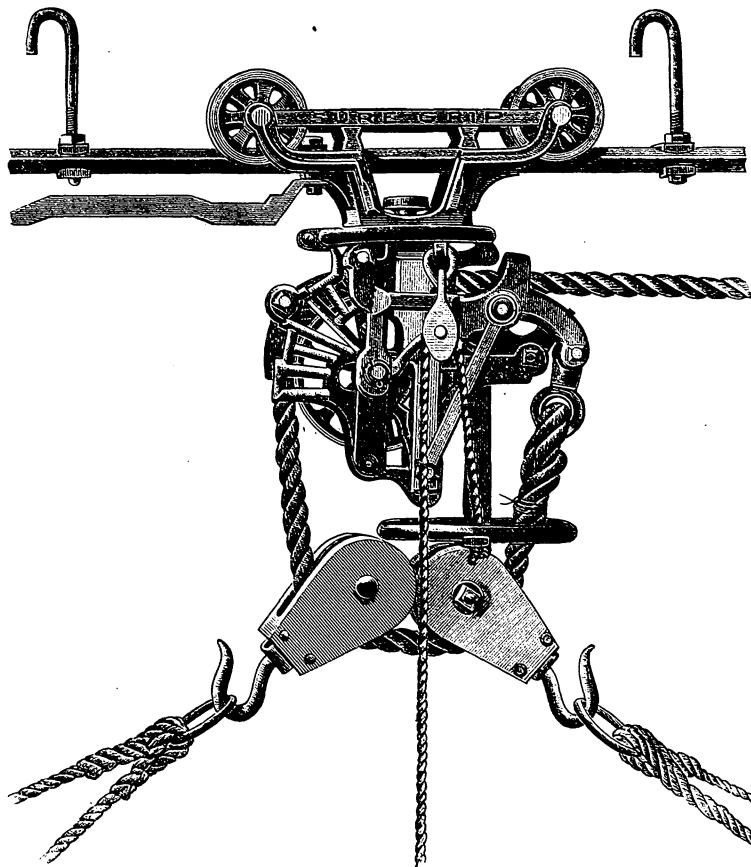


Fig. 1.—Hay Carrier No. 489.

bundle at any elevation. To allow a bundle of hay to be carried over into a

sufficiently to be free from the load a tripping device is attached to the

the carrier from the stop the instant the load is elevated sufficiently to travel into the mow by simply tripping the lock device by means of the small rope. Attention is called to the fact that the carrier is swivel reversible, that it will operate equally well in either direction from the stop, the stop being so arranged as to allow the carrier to approach it in any manner or from any direction it may come, and that it will reverse whether in the stop or away from the stop. The rope wheel in the carrier is six inches in diameter, to give it power in elevating the bundle. The carrier is constructed throughout of malleable iron and steel, and is made unusually strong in all its parts, as it is designed for hard usage and to elevate heavy loads. It is remarked that the slings used in connection with the carrier trip in the center and have two spreaders to each half.

Gross Mfg. Company, 20 Murray street, New York, are introducing a novelty known as an apron supporter, adapted for either sex. It is simply a strip of flat steel $\frac{1}{8}$ inch wide, nickelized, with rounded edges, so made that when adjusted to the person it fits any figure. When in use a light pressure keeps it in place, obviating the use of strings, bands, buttons, &c. It is quickly slipped through the apron band, and can be had in 11 sizes from 22 to 32 inches, and larger ones to order. The same principle is applied as a bib or napkin supporter for use around the neck. These may be had in 10 to 16 inch sizes. With the latter are furnished two clamps for holding a bib, napkin, towel or similar article, ac-

cording to the use for which it is intended. Both articles are made in steel, nickelized or japanned.

The Bardsley Liquid Door Check and Spring.

J. Bardsley, 149-151 Baxter street, New York, is introducing a door check and spring, as shown in the accompany-

ditional brace to insure special strength with rigidity at the crank hanger, and to permit a reduction of weights without fear of break downs. It has a narrow tread, long head and high frame, being made for the general run of riders, instead of for racing exclusively. The machines have 43-inch wheel base, special bearings, wood rims, tangent spokes, with tires optional. The line includes a 22-pound racer, 25 pound

The gong, it is claimed, works easily and possesses a fine tone. The bell is of an unusually small size and is made up in response to the demand for a well made, low priced article.

Buhl Dash Lantern.

The accompanying cut of a dash lantern represents one of the six pieces

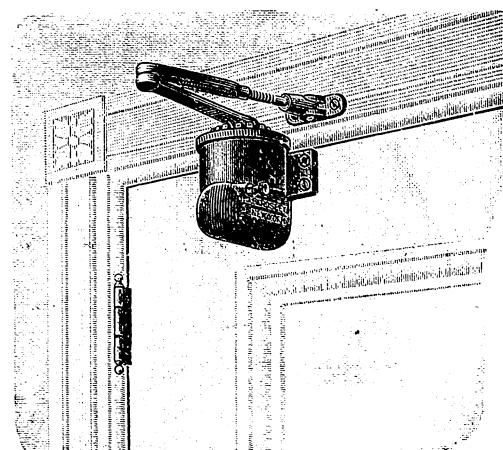


Fig. 1.—Bardsley's Liquid Door Check and Spring.

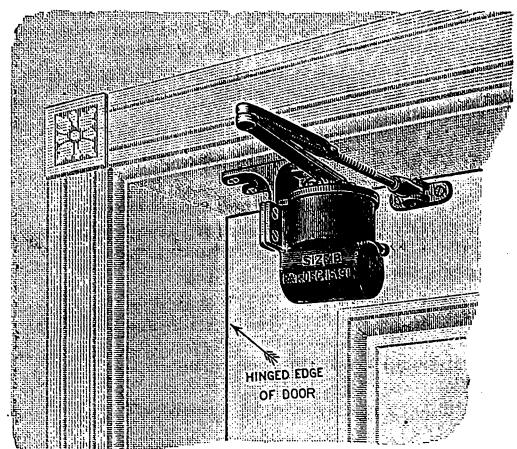


Fig. 2.—Check and Spring Attached to Left Hand Side of Door.

ing illustrations. The checking is done by means of a liquid, with which, it is remarked, as there is almost an entire absence of friction, the whole of the spring power is devoted to closing the door. In Fig. 1 the device is shown attached to the hinged side of a right hand door, while in Fig. 2 it is attached by means of a bracket to the side of a left hand door away from the hinges. The check and spring is made in five sizes, of sufficient range to operate doors from small to large sizes. As announced in his advertisement in another column, Mr. Bardsley is desirous of obtaining agents for the sale of this door check and spring in the principal towns and cities.

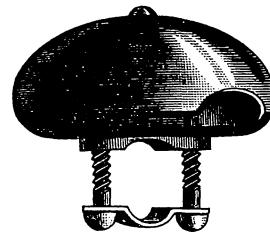
The '94 Winton.

In addition to their double frame machine, the Winton Bicycle Company, Cleveland, Ohio, will market a line of

light roadster and a 28 pound full roadster stripped, or 32 pounds all on. It is stated that these machines are of the highest grade throughout.

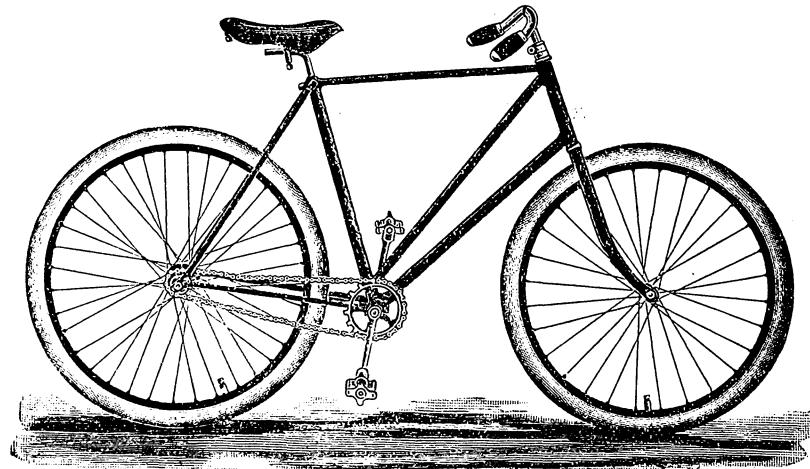
Bicycle Bell.

Haines & Zimmerman, 407 Cherry street, Philadelphia, are putting on the



Bicycle Bell.

market the bicycle bell shown in the accompanying cut. The bell is 2 inches

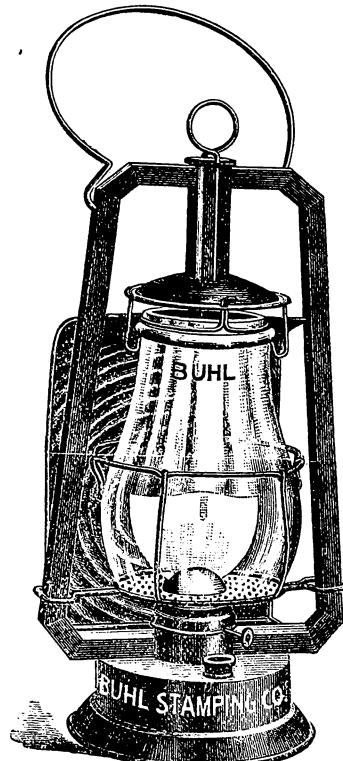


The '94 Winton.

wheels like the one shown in the accompanying cut. While following the regular Humber lines the wheel has an ad-

in diameter, has a closed base and double stroke, and is designed to fit any standard handle bar in the market.

contained in the Mascot assortment of the Buhl Stamping Company, Detroit, Mich. These goods are furnished in colored hard enamel finish. It is remarked that the lanterns contain the latest improvements, never leak, give a steady bright light and never go out in the wind. The Brilliant assortment put up by the company contains one dozen square lift tubular lanterns, assorted red, blue, rus-



Buhl Dash Lantern.

set and maroon colors. The assortments are referred to as being especially adapted to the wants of small customers and hardware jobbers during such a year of business depression as the present.

Current Hardware Prices.

DECEMBER 20, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturer's prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

The character @ is used to indicate a range of price; thus discount 50@10@50@10@5% signifies that the goods in question are sold at prices ranging from discount 50 and 10% to discount 50 and 10 and 5%.

Adjusters, Blind—

Domestic.... \$ per doz \$3.00, 88@33@10%
Excelsior.... \$ per doz \$10.00..... 50@10@25%
North's..... list net @ 10%
Zimmerman's—See Fasteners Blind.

Ammunition—See Caps, Cartridges, Shells, &c.**Anvils—**

Am. Wrought, Horsehoe brand.... 11@11@14%
Armitage's Mouse Hole.... 10@11@14%
Eagle Anvils, # to 96.... 16@16@25%
Moore & Barnes Mfg. Co.... 88@10%
S. & H. machine finished.... 10@11@14%
Trenton.... 10@10@14%
Wilkinson's.... 10@11@14%
Peter Wrights.... 11@11@14%

Anvill Vise and Drill—

Allen Anvill and Vise \$3.00..... 40@10%
Cheney Anvill and Vise..... 25%
Miller's Falls Co., \$18.00..... 30%
Star..... 45@25%

Apple Parers—See Parers Apple, &c.**Augers and Bits—**

Boring Machine Augers.... 70@70@10%
Car Bits, 12-in, twist.... 50%
Common Augers and Bits.... 70@70@10%
Cincinnati Bell-Hangers' Bits.... 30@10%
Forstner Pat. Auger Bits.... 15%
Jennings' Pattern Car Bits.... 40%
Jennings' Pattern Auger Bits.... 60%
C. E. Jennings & Co., No. 10, extension
tip.... 40%
C. E. Jennings & Co., No. 30.... 60%
C. E. Jennings & Co., Auger Bits, # set
32@quarters, No. 5, \$5; No. 30, \$3.50@25%
Russell Jennings' Augers and Bits 25@10%
Lewis' Patent Single twist.... 45%
L'Hommedieu Car Bits.... 15@10%
Pugh's Black.... 20%
Pugh's Jennings Pattern.... 30%
Snell's Bits.... 60@5%

Bit Stock Drills—

Cleveland.... 50@10@5%
Cincinnati, for wood.... 30@10%
Cincinnati, for metal.... 45@10%
Morse twist Drills.... 50@10@5%
Standard.... 50@10@5%
Syracuse, for metal.... 50@10%
Syracuse, for wood (wood list).... 30@30@5%

Expansive Bits—

Clark's small, \$18; large, \$26. 35@35@10%
Ives' No. 4, \$ per doz \$60..... 40%
Steer's No. 1, \$26; No. 2, \$15.... 35@40%
Stearns' No. 2, \$48.... 20%
Swan's.... 40%

Gimlet Bits—

Bee.... 25@25@5%
Common.... \$ per gross \$2.75@4\$2.25
Diamond.... \$ per doz \$1.25.... 40@10%
Double Cut:
Shepardson's.... 45@45@10%
Ct. Valley Mfg. Co.... 30@10%
Hartwell's.... \$ per doz \$10.00.... 40@10%
Douglass'.... 40@10%
Ives.... 60@60@10%

Hollow Augers—

Bonney's Adjustable, \$ per doz \$48.... 50%
Cincinnati Adjustable.... 25@10%
Cincinnati Standard.... 25@10%
Douglas'.... 33@33@10%
French, swift & Co. (Beecher)
33@33@10%
Ives'.... 33@33@10%
Ives' Expansive, each \$4.50.... 50@5%
Stearns'.... 20@10%
Universal Expansive, each \$4.50.... 20%
Wood's.... 25@25@10%

Ship Augers and Bits—

L'Hommedieu's.... 15@10@15@10@5%
Snell's Ship Auger Pat'n, Car Bits.... 35@25@10%
15@10@15@10@5%
Watrous'.... 25@25@10%

Awl Hafts—See Hafts, Awl.**Awls—**

Awls, Sewing, Common.... \$ gr. 85@40%
Awls, Should. Peg.... \$ gr. \$1.50@1\$1.55
Awls, Pat. Peg.... \$ gr. 35@35@8%
Awls, Shouldered Brad.... \$ gr. \$1.80@1.40
Awls, Handled Brad.... \$ gr. \$2.50@2\$3.00
Awls, Handled Scratch.... \$ gr. \$4.00@4\$4.50
Awls, Socket Scratches.... \$ doz \$1.10@1.20

**Awl and Tool Sets—See
etc., Awl and Tool.****Axes—**

Plain, Beveled.
First quality, best brands \$7.00.... 87.50
First qual., other brands { 6.50.... 7.00
Second quality..... 6.00.... 6.00

**Axle Grease—See Grease,
Axle.****Axes—**

No. 1.... 33@4@4%; 41@6@5@5%
Nos. 7 to 14.... 70%
Nos. 15 to 28.... 47@5%
Nos. 19 to 29.... 50%
Concord Axles, loose collar.... 5% cash
Concord Axles, solid collar.... 5@6@6%

**Bag Holders—See Holders,
Bag.****Balances—**

Spring Balances.... 40%
Chatillon, \$ per doz \$0.80 0.95 1.75 net 40%
Chatillon Straight Balances.... 50@10%
Chatillon Circular Balances.... 50@10%

Barb Wire—See Wire, Barb.**Bars—**

Cast Steel..... \$ per lb 31@
Iron, Steel Points..... \$ per lb 24

Basins, Wash—

Standard Fiberware, No. 1, 10@14-in, \$1.80;
12-inch, \$2.00; 13@4-inch, \$2.60; 16-inch,
\$3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '92, 50@10@6%
50@10@25%
Chatillon's No. 1.... 40%
Chatillon's No. 2.... 50%
Custer's.... 33@4%

Beaters—

Egg—
Bryant's.... \$ per gross \$14.00

Double (H. & R. Mfg. Co.).... \$ per gro. \$12.00; No. 1, \$15.00; No. 2.... \$16.00

Dover.... \$ per doz \$1.00@5@20

Dover (Standard Co.).... \$ per doz \$1.00

Duplex (Standard Co.).... \$ per doz \$1.00

Duplex Extra Heavy (Standard Co.).... \$ per doz \$3.50

Easy (H. & R. Mfg. Co.).... \$ per gro. \$12.00

Improved Acme (H. & R. Mfg. Co.).... \$ per gro. \$9.00

Silver & Co.... \$ per doz \$5.00

Spiral.... \$ per gro. \$4.25 @ \$4.50

Triple (H. & R. Mfg. Co.).... \$ per gro. \$16.50

Culinary—
Keystone, P. D. & Co., Each, No. 1, \$1;
No. 2, \$2.... 20%

Bells—

Cow—
Common Wrought.... 60@10%
Dodge, Genuine Kentucky.... 70@70@10%
Kentucky, Sargent's list.... 70@10%
Kentucky, "Star".... 20@10%
Texas Star.... 50@10@50@25%
Western, Sargent's list.... 70@10%

Door—

Crane, Brooks.... 50@10@2%

Crane, Cone's.... 10%

Crane, Connel's.... 20@10%

Gong, Abbe's.... 88@10%
Gong, Barton's.... 40@10@50%
Gong, Yankee.... 45@10%

Lever, R. & E. Mfg. Co.'s.... 50@10@2%

Lever, Sargent's.... 60@10%

Lever, Taylor's Bronzed or Plated.... net

Lever, Taylor's Japanned.... 25@10%

Pull, Brook's.... 50@10@2%

Electric—
Bigelow & Dowse.... 20%
Wollensak's.... 20%

Hand—

Extra Heavy Brass.... 70%

Light Brass.... 70@10@70@10@5%

Silver Chime.... 33@4@10%
White.... 70%

Globe Cone's Patent.... 25@10@35%

Miscellaneous—
Call.... 45@50%
Farm Bells.... \$ per doz \$3@3@5%
Steel Alloy Church and School Bells.... 40%

Bellows—

Blacksmith's.... 60@10@5@60@10@5@10%

Hand Bellows.... 40@10@5@10@5@10%

Molders.... 40@10@5@10@5@10%

Belting, Rubber—

Common Standard.... 75@75@10%

Extra.... 60@10@80@10@10@10%

Standard.... 70@5@60@70@10@10%

N.Y.B.&P. Co., Carbon.... 60@60@5%

N.Y.B.&P. Co., Diamond.... 50@50@5%

N.Y.B.&P. Co., Para.... 40@40@5%

Bench Stops—See Stops, Bench

Benders and Upsetters, Tire—
Detroit Perfected Tire Bender.... 15%

Green River Tire Benders and Upsetters.... 20%

Stoddard's Lightning Tire Upsetters.... 15%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.,
see Augers and Bits.

Bit Holders—See Holders.**Blind Adjusters—See Ad-
justers, Blind.****Blind Fasteners—See Fasten-
ers, Blind.****Blind Staples—See Staples,
Blind.****Blocks—**

Cleveland Block Co., Mal. Iron.... 60@60@10%

Moore's Novelty, Mal. Iron.... 50%

sure Grip Steel Tackle Blocks.... 25%

See also Machines, Hoisting.

Bolts—**Carriage, Machine, &c.—**

Com. list June 10, '94.... 80@5@80@10%

Genuine Eagle, Norway, list Oct. '94.... 80@5@80@10%

Eagle, Norway, list Oct. '94.... 80@5@80@10%

R.B. & W. Old list.... 70%

Bolt Ends, list Jan. 1, '90.... 80@80@80@25%

Machine, list Jan. 1, '90.... 80@10@80@25%

Door and Shutter—
Cast Iron Barrel, Square, &c.... 70@10%

Cast Iron Chain (Sargent's list).... 65@10%

Cast Iron Shutter Bolts.... 70@10%

Ives' Patent Door Bolts.... 60@10@60@10@5%

Wrought Barrel.... 70@10@75%

Wrt. B. K. Flush, Common.... 55@10%

Wrt. Shutter, Brass Knob.... 50@50@5%

Wrt. Shutter, Sargent's Hat.... 60@10%

Wrt. Shutter, all iron, Stanley's.... 60@10@60@10@10%

Wrought Square.... 70@10@75%

Wrt. Sunk Flush, Sargent's list.... 60@10@10@5%

Wrt. Sun Flush, Stanley's list.... 50@10@10@5%

Door and Shutter—
Cast Iron—
Fast Joint, Broad.... 50@10@60@5%

Fast Joint, Narrow.... 50@10@25@60@5%

Loose Joint, Japanned.... 75@5@5%

Loose Pin, Acorns, Japanned.... 75@5@10@5%

Loose Pin, Acorns, Japanned, 5@5@5%

Loose Pin, Tapered.... 5@5@5%

Mayer's Hinges.... 50@10@10@5%

Parliament Butts.... 50@10@10@5%

Wrought Steel—
Fast Joint, Broad....
Fast Joint, Narrow....
Fast Joint, Lt. Narrow....
Inside Blind, Light....
Inside Blind, Regular....
Loose Joint, Broad....
Loose Pin,....
Table Butts, Back Flaps, &c....

Wrought Steel—
Fast Joint, Broad....
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Loose Pin,....
Table Butts, Back Flaps, &c....

Wrought Steel—
Fast Joint, Broad

Chalk Lines—See *Lines*.**Checks, Door**

Unifly 50%

Chisels**Socket Framing and Firmer****Mix**

New Haven

Ohio Tool Co.

P. S. & W.

Witherby

Buck Bros.

Douglas

Merrill

L. & J. White

Tanged and Miscellaneous

Sick Bros.

Butchers

Cold Chisels, fair quality, $\frac{1}{2}$ in.

Spear & Jacksons

Tanged Firmer

Chucks

Seach Pat.

Danbury

Graham Patent

Morse's Adjustable

Syracuse Bal Pat

Skinner's Patent

Combination Lathe Chucks

Drill Chucks

Independent Lathe Chucks

Universal Lathe Chucks

Union Mfg. Co.

Combination

Independent

Universal

Victor

Churns

McDermid Star Barrel

6 gal., \$2.60; 10 gal., \$2.75; 15 gal.,

\$3.00; 20 gal., \$3.25

Tiffin Union, each, 5 gal., \$3.25; 7 gal.,

\$3.75; 10 gal., \$4.25

Clamps

Adjustable, Cincinnati

Adjustable Hammers

Adjustable, Steam's

Barnes' Machinists' Clamps

Cabinet, Sargent's

Carpenter's, Cincinnati

Carriage Makers', P. S. & W. Co.

Carriage Makers', Sargent's

Eberhard Mfg. Co.

R. I. Tool Co.'s Wrought Iron

Saw Clamps, see Vises, Saw Fliers

Stearn's Adjustable Cabinet and Cor-

ner

Warner's

40 $\frac{1}{2}$ in. 10 $\frac{1}{2}$ in. 10 $\frac{1}{2}$ in.

Cleavers, Butchers

Beatty's

Bradley's

Foster Bros.

New Haven Edge Tool Co.'s

P. S. & W.

Schulte, Lohoff & Co.

L. & J. White

20 $\frac{1}{2}$ in.

Clips

Baker Axle Clips

Norway Axle, $\frac{1}{2}$ & 1 $\frac{1}{2}$ Norway Spring Bar Clips, 5-16, .062 $\frac{1}{2}$ & .051 $\frac{1}{2}$ 2d grade Norway Axle, $\frac{1}{2}$ & 1 $\frac{1}{2}$, .062 $\frac{1}{2}$ & .051 $\frac{1}{2}$

Steel Felloe Clips

P. D. 5 $\frac{1}{2}$

Superior Axle Clips

Wrought Iron Felloe Clips

P. D. 5 $\frac{1}{2}$

Cloth and Netting, Wire

—See *Wire, &c.*

Cockeyes

Cocks, Brass

Hardware list (Globe, Keroseen, Lever

Bilbs, Racking, &c.)

Coffe Mills

—See *Mills, Coffee*

Collars, Dog

Brass, Pope & Steven's list

Chapman Mfg. Company, new list

Embossed, Gilt, Pope & Steven's list

30 $\frac{1}{2}$ in.

Leather, Pope & Steven's list

40 $\frac{1}{2}$ in.

Medford Fancy Goods Co.

40 $\frac{1}{2}$ in. 60 $\frac{1}{2}$ in.

Combs, Curry

American Curry Comb Co.

33 $\frac{1}{2}$ in. 40 $\frac{1}{2}$ in.

Fitch's

50 $\frac{1}{2}$ in. 60 $\frac{1}{2}$ in. 80 $\frac{1}{2}$ in. 10 $\frac{1}{2}$ in.

Kohler's Human

P. D. 1 $\frac{1}{2}$

Kohler's Magi Oscillating

P. D. 1 $\frac{1}{2}$

Rubber, per doz., \$10.00

25 $\frac{1}{2}$ in.

Compasses, Dividers & c.

Compasses, Calipers, Dividers

70 $\frac{1}{2}$ in. 10 $\frac{1}{2}$ in.

Beals' & Call Co.'s

Dividers

.65 $\frac{1}{2}$

Calipers, Call's Patent Inside

.55 $\frac{1}{2}$

Calipers, Double

.65 $\frac{1}{2}$

Calipers, Inside or Outside

.65 $\frac{1}{2}$

Calipers, Wing

.60 $\frac{1}{2}$

Compasses

.50 $\frac{1}{2}$

excelsior

.50 $\frac{1}{2}$

Starrett's

Combination Dividers

.25 $\frac{1}{2}$

Lock Calipers and Dividers

.25 $\frac{1}{2}$

Spring Calipers and Dividers

.25 $\frac{1}{2}$

Stevens & Co.'s

.25 $\frac{1}{2}$ 4 $\frac{1}{2}$ in.

Coolers, Water

S. S. & Co.

3 gal., \$2.00; 5 gal., \$2.50;

4 gal., \$2.75; 6 gal., \$3.40 each.

33 $\frac{1}{2}$ in.

Coopers' Tools

—See *Tubs, Coopers*.

Cord — Sash

Braided, Crown Drab and Fancy

P. D. 5 $\frac{1}{2}$

Braided, Crown White

P. D. 50 $\frac{1}{2}$

Cable Laid Italian Sash

P. D. 19 $\frac{1}{2}$

Common

P. D. 8 $\frac{1}{2}$

Common Russia Sash

P. D. 12 $\frac{1}{2}$

Egyptian, India Hemp, Braided

.26 $\frac{1}{2}$

India Cable Laid Sash

P. D. 11 $\frac{1}{2}$

Massachusetts, White

.25 $\frac{1}{2}$

Ossawa Mill

Braided, Giant, Drab and Fancy

P. D. 3 $\frac{1}{2}$

Braided, Giant, White

P. D. 30 $\frac{1}{2}$

patent, good quality

P. D. 10 $\frac{1}{2}$

patent, Russia Sash

P. D. 13 $\frac{1}{2}$

Sanson

Braided, Drab Cotton

P. D. 42 $\frac{1}{2}$

Braided, Italian Hemp

P. D. 40 $\frac{1}{2}$

Braided, Linen

P. D. 56 $\frac{1}{2}$

Braided, White Cotton

P. D. 37 $\frac{1}{2}$

Simpson, Item, Braided, White

.26 $\frac{1}{2}$

Silver Lake

Quality, Drab, 55 $\frac{1}{2}$ A quality, White, 55 $\frac{1}{2}$ B quality, Drab, 35 $\frac{1}{2}$ B quality, White, 30 $\frac{1}{2}$

Sylvan Spring, Extra Braided, Drab

.39 $\frac{1}{2}$

Sylvan Spring, Extra Braided, White

.34 $\frac{1}{2}$

Tate's Soli Braided

Economy, Drab

.27 $\frac{1}{2}$

Economy, White

.29 $\frac{1}{2}$

Hercules, Drab

.25 $\frac{1}{2}$

Hercules, White

.25 $\frac{1}{2}$

White Cotton Braided, fair

P. D. 23 $\frac{1}{2}$

Wire Picture

Wire PictureBraided, or Twisted 30 $\frac{1}{2}$ & 80 $\frac{1}{2}$ & 15 $\frac{1}{2}$ **Corkscrews**—See *Screws, Cork*.**Corn Knives and Cutters**—See *Knives, Corn*.**Crackers, Nut**

Acme

Jappanned, $\frac{1}{2}$ gro., \$30 50 $\frac{1}{2}$ Nickel Plated, $\frac{1}{2}$ gro., \$30 10 $\frac{1}{2}$ Blake's Pattern, $\frac{1}{2}$ doz., \$2.00 10 $\frac{1}{2}$ Table (H. & B. Mfg. Co.) 40 $\frac{1}{2}$ Turner & Seymour Mfg. Co. 50 $\frac{1}{2}$ **Cradles**Grain 50 $\frac{1}{2}$ & 80 $\frac{1}{2}$ & 5 $\frac{1}{2}$ **Crayons**White Crayon, $\frac{1}{2}$ gross 7 $\frac{1}{2}$

D. M. Stewart Mfg. Co.

Metal Workers' 25 $\frac{1}{2}$ Ballroad, $\frac{1}{2}$ gross 2.00 25 $\frac{1}{2}$ Rolling Mill, $\frac{1}{2}$ gross 2.50 25 $\frac{1}{2}$ Soapstone Pencils, $\frac{1}{2}$ gross, 1.50 25 $\frac{1}{2}$ See also *Chalk*.**Creamery Pails**—See *Pails, Creamery*.**Crow Bars**—See *Bars, Crow*.**Curry Combs**See *Combs, Curry*.**Curtain Pins**See *Pins, Curtain*.**Cutters**Meat 30 $\frac{1}{2}$ American 30 $\frac{1}{2}$ Nos. 1 2 3 4 5 B 5 $\frac{1}{2}$

Each \$5.67 \$10.25 \$50 \$80

Enterprise 25 $\frac{1}{2}$ Nos. 1 2 3 4 5 B 5 $\frac{1}{2}$

Each \$3.25 \$4.25 \$15

Dixon's, $\frac{1}{2}$ doz. 40 $\frac{1}{2}$ & 5 $\frac{1}{2}$ Nos. 1 2 3 4 5 B 5 $\frac{1}{2}$

Each \$14.00 \$17.00 \$19.00 \$30.00

Draw Cut, each 20 $\frac{1}{2}$

Nos. 5 6 7 8

\$50 \$75 \$80 \$225

Hale's, $\frac{1}{2}$ doz. 70 $\frac{1}{2}$

Nos. 11 12 13

\$27.00 \$33.00 \$45.00

Home No. 1, $\frac{1}{2}$ doz. 28.00Little Giant, $\frac{1}{2}$ doz. 55 $\frac{1}{2}$

Nos. 305 310 312 320 322

\$35.00 \$48.00 \$44.00 \$72.00 \$68.00

Miles' Challenge, $\frac{1}{2}$ doz. 45 $\frac{1}{2}$ & 5 $\frac{1}{2}$

Nos. 100 150

\$22.00 \$30.00 \$40.00

Triumph No. 50, $\frac{1}{2}$ doz. 21.00 & 25 $\frac{1}{2}$ Woodruff's, $\frac{1}{2}$ doz. 40 $\frac{1}{2}$ & 5 $\frac{1}{2}$

Nos. 100 150

\$15.00 \$18.00

Beef Shavers (Enterprise) 20 $\frac{1}{2}$ Chadborn's Smoked Beef Cutter, $\frac{1}{2}$ doz. 66.00

Slaw and Kraut

Tucker & Dorsay Mfg. Co.

Kraut Cutters 40 $\frac{1}{2}$ Slaw Cutters, 1 Knife, $\frac{1}{2}$ gross 21.00Slaw Cutters, 2 Knife, $\frac{1}{2}$ gross 30.00

Tobacco

Appleton's, $\frac{1}{2}$ doz. 16.00

Bonney's, <

Halters—

Cover's Adj. Rope Halters..... 40²⁵
 Cover's Adj. Web Halters..... 35²⁵&25
 Cover's Hemp Horse and Cattle Ties..... 50²⁵&25
 Cover's Jute Cattle Ties..... 70²⁵&10²⁵
 Cover's Jute Horse Ties..... 70²⁵&25
 Cover's Rope, 7¹/₂-in., Jute..... 70²⁵&25
 Cover's Rope, 14-in., Hemp..... 50²⁵&25
 Cover's Rope, Jute, 60²⁵&10²⁵&25
 Cover's Saddlery Works Halters..... 33²⁵
 Cover's Saddlery Works Handy Web
Halters..... 33²⁵
 Cover's Saddlery Works Horse and
Cattle Ties..... 33²⁵

Hammers—

Handled Hammers—
 Atha Tool Co.....
 Buffalo Hammer Co.
 Humason & Beckley..... 50²⁵&10²⁵
 Verree.....
 Cheney's Claw..... 40²⁵&10²⁵
 Cheney's Machinist's & Riveting..... 50²⁵&25
 C. Hammond & Son..... 40²⁵&10²⁵
 Magnetic Tack, Nos. 1, 2, 3, \$1.25, 1.50 &
1.75..... 30²⁵&10²⁵
 Maydole's, list Dec. 1 '88..... 25²⁵&10²⁵&35²⁵
 Peck, Stow & Wilcox..... 35²⁵&40²⁵
 Fayette R. Plumb.....
 Artisan's Choice, A. E. Nall..... 40²⁵&10²⁵
 Horseshoe Turning Hammers..... 50²⁵
 Regular Y. & P. A. E. Nall..... 50²⁵
 Other Hammers..... 50²⁵&10²⁵
 Nelson Tool Works..... 40²⁵&10²⁵
 Sargent's..... 40²⁵&40²⁵&10²⁵
 Warner & Nobles, new list..... 25²⁵&10²⁵

**Heavy Hammers and
Sledges—**

3 lb and under..... 75²⁵&10²⁵&75²⁵&10²⁵
 3 to 5 lb..... 75²⁵&10²⁵&75²⁵
 Over 5 lb..... 75²⁵&10²⁵
 Wilkinson's Smiths..... 10²⁵&11²⁵&10²⁵

Handcuffs and Leg Irons—

See Police Goods.

Handles—

Cross-Cut Saw Handles—
 Atkins' new list..... 40²⁵
 Champion..... 15²⁵
 Ely's Perfection..... 75²⁵&10²⁵
 Sensible..... 40²⁵

Iron, Wrought or Cast—

Barn Door, 4 oz \$1.40..... 10²⁵&10²⁵
 Bronze Iron Drop Latches, 7 oz doz net

Chest and Lifting..... 70²⁵&10²⁵
 Door or Thumb:

Nos. 0, 1, 2, 3, 4.....
 Per doz \$0.90 1.00 1.08 1.35 1.50
 60²⁵&10²⁵&10²⁵

Jap'd Store Door Handles—Nuts, \$1.62;
 Plate, \$1.10; no plate, \$0.88..... net

Roggins' Latches..... 75²⁵&10²⁵

Wood—

Auger, assorted..... 75 gr. 50²⁵
 Auger, large..... 75 gr. 7.00..... 50²⁵

File, assorted..... 75 gr. 2.75..... 50²⁵

Bradawl..... 75 gr. \$2.00
 Apple Firmer Chisel, ass'd..... 75 gr. 5.00
 Apple Firmer Chisel, large..... 75 gr. 6.00

Hickory Firmer Chisel, ass'd..... 75 gr. 4.50
 Hickory Firmer Chisel, large..... 75 gr. 5.00

Socket Firmer Chisel, ass'd..... 75 gr. 3.00
 Socket Framing Chisel, ass'd..... 75 gr. 5.00

Hammer, Hatchet, Axe, &c. 40²⁵&45²⁵
 Hoe, Rake, Shovel, &c. 60²⁵&60²⁵&55²⁵

Pat. Auger, Douglass..... 75 set \$1.25
 Pat. Auger, Ives'..... 30²⁵&10²⁵

Pat. Auger, Swan's..... 75 set \$1.00

Saw and Plane..... 40²⁵&10²⁵&60²⁵

J. B. Smith & Co.'s Pat. File..... 50²⁵

Hangers—

Barn Door, New England..... 70²⁵&70²⁵
 Barn Door, old patterns..... 70²⁵&70²⁵

Barry..... 50²⁵
 Best Anti-Friction..... 60²⁵&10²⁵&60²⁵&10²⁵

Boss..... 60²⁵&10²⁵&60²⁵&10²⁵

Carrier Steel Anti-Friction..... 50²⁵&10²⁵

Champion..... 60²⁵&10²⁵

Chicago Anti-Friction..... 30²⁵&10²⁵

Climax Anti-Friction..... 55²⁵

Cincinnati Nos. 1, \$2.25; 8, \$2.50; 4, \$2.50

Crescent..... 60²⁵&60²⁵

Cronk's Patent, Steel Covered..... 50²⁵&10²⁵

Duplex (Wood Track)..... 60²⁵&10²⁵

Economy, \$6.00..... 60²⁵&10²⁵

Hamilton Wrought Steel Track..... 55²⁵

Interstate..... 50²⁵&10²⁵&60²⁵

Kidder's..... 50²⁵&10²⁵&10²⁵

Lane's New Standard..... 60²⁵&60²⁵

Lane's Parlor..... 40²⁵

Lane's Standard..... 50²⁵&10²⁵&60²⁵

Lundy, Steel Parlor..... 40²⁵

Magic..... 45²⁵&10²⁵

Matchless..... 50²⁵&10²⁵

Moody..... 45²⁵

Moore's Baggage Car Door..... 33²⁵

Moore's Railroad..... 55²⁵

Nickel, Steel, Nos. 0, \$55; 1, \$20; 2, \$15;
40²⁵&10²⁵

Orleans Steel..... 55²⁵

Paragon Nos. 5, 5¹/₂, 7 and 8..... 20²⁵&10²⁵

Pendulum, Payson's..... 40²⁵&60²⁵

Perfection..... 50²⁵&10²⁵&60²⁵&10²⁵

Richards'..... 30²⁵&30²⁵

Samson Steel Anti-Friction..... 55²⁵

Star..... 40²⁵&10²⁵&40²⁵&10²⁵

Stearns' Anti-Friction..... 20²⁵&10²⁵

Stearns' Challenge..... 25²⁵&10²⁵

Sterling..... 50²⁵&10²⁵

Terry's Ideal..... 50²⁵&10²⁵&60²⁵

Terry's Modern..... 50²⁵&10²⁵&60²⁵

Terry's Shield..... 50²⁵&10²⁵

Terry's Solid..... 50²⁵&10²⁵

Terry's Wrought Single Strap..... 50²⁵&10²⁵

Victor, No. 1, \$16.00; No. 2, \$16.50; No.
3, \$18.00..... 50²⁵&10²⁵

Warner's Pat..... 20²⁵&10²⁵

Wild West..... 45²⁵&10²⁵

Zenith for Wood Track..... 55²⁵

Harness Snaps—

See Snaps.

Hatchets—

American Axe and Tool Co.

Blood's.....

Hunt's.....

Hurd's..... 40 & 10

Mann's..... 40 @ 10

Peck's..... 40 & 10

Underhill's..... 45 & 5

C. Hammond & Son.

Fayette R. Plumb..... 10²⁵

Collins.....

Buffalo Hammer Co.....

Kelly's, W. Co..... 50 @ 50

Sargent's & Co..... &10²⁵

Schulte, Lohoff & Co.....

Ten Eyck Edge Tool Co.....

Hay and Straw Knives

See Knives.

Hinges—**Blind Hinges—**

Clark's, Nos. 1, 2, 3, 5, 1868, Old Pattern

Nos. 1 and 3, Tip Pattern, 75²⁵&10²⁵

No. 5, Buffalo Noiseless, 40, 60

and 65

Buffalo Reversible, Nos. 3, 2, 1¹/₂, 75²⁵

1 and 0..... 70²⁵

No. 1, Cottage, for wood only..... 80²⁵&10²⁵

Dixie L. & F., Nos. 3, 2¹/₂, 1, 0, 0, 4 and 5..... 75²⁵

No. 25, Empire Reversible, 75²⁵&10²⁵

Lull & Porter, Nos. 3, 2¹/₂, 1, 1¹/₂, 4 and 6..... 75²⁵&10²⁵

Mortise Gravity, Nos. 2, 4, 4¹/₂, 6, 8, 9 and 10..... 75²⁵&10²⁵

Parker..... 60²⁵&10²⁵

Reading's Gravity, 75²⁵&10²⁵&75²⁵

Delt Flat Key.....	.30	z
Mallory, Wheeler & Co. list July '88.....	60 & 10 @ 70¢	
Plate.....	.88 & 2¢	
Romer's Night Latches.....	.15¢	
R. & E. Mfg. Co., list Mar. 20, 1880.....	60 & 10 @ 70¢	
Sargent & Co., list Aug. 1, '86.....	.50 & 10 @ 70¢	
Warner's Burglar Proof, \$1 doz, \$4.00, 90¢ net prices		
Yale.....		
 Elevator—		
Moore's.....	.88 & 5¢	
 Padlocks—		
Ames Sword Co. up to No. 150.....	.40¢	
Ames Sword Co. above No. 150.....	.50¢	
Barnes Mfg. Co. ....	.40 @ 40 & 10¢	
Champion Padlocks.....	.40¢	
A. E. Deltz.....	.40¢	
Eagle.....	.40¢	
Eureka, Eagle Lock Co. ....	.40 & 2¢	
E. T. Frazee's Keystone Scandinavian, 1010 line.....	.90 & 40¢	
120 line.....	.90 & 25¢	
100 line.....	.65¢	
510 line.....	.70 & 10¢	
225, 610 and 200 lines.....	.70¢	
All other numbers.....	.50 & 5¢	
Horseshoe.....	* doz \$9.50 & 50¢	
Hotchkiss.....	.30¢	
Nock's.....	.30¢	
Norwich Lock Mfg. Co., old list.....	.50 & 2¢	
Romer's Nos. 0 to 91.....	.30¢	
Romer's Scandinavian, &c., Nos. 100 to 505.....	.15¢	
Scandinavian.....	.90 & 50¢	
Slaymaker, Harry & Co. No. 1010 line.....	.90 & 50¢	
No. 41 line.....	.50¢	
No. 61 line.....	.60¢	
No. 21 line.....	.80¢	
Star.....	.60¢	
Yale Lock Mfg. Co.'s.....	net prices	
 Sash, &c.—		
Attwell Mfg. Co. ....	.25 & 3¢ 1/2	
Champion Safety list January, 1893.70 & 5¢		
Clark's No. 1, \$10; No. 2, \$8 & gr. ....	.33 & 1/2	
Common Sense, Jap'd and Cop'd and Br'zed.....	\$1 gr. \$1.00	
Common Sense, Nickel Plated.....	.3 gr \$1.00	
'Corbin's Daisy, list Feb. 15, 1888.....	.70¢	
Davis Bronze, Barnes Mfg. Co. ....	.60¢	
Ferguson's.....	.33 & 1/2	
Fish (Lieches' pat.), No. 100, * gr. 58.....	.50¢	
Giant, list Jan. 1892.....	.70 & 5¢	
Hammond's Window Springs.....	.40¢	
Hugunin's New Sash Locks.....	.25 & 5¢ & 2¢	
Hugunin's Saab Balances.....	.25 & 5¢ & 2¢	
Ives' Patent.....	.60 & 10 & 5¢ @ 50 & 10 & 5¢	
Kempshall's Gravity.....	.60¢	
Kempshall's Model.....	.60 @ 60 & 10¢	
Monarch.....	.50¢	
Payson's Perfect.....	.60 & 10 & 10¢	
Reading.....	.60 & 10 @ 60¢ & 10 & 10¢	
Security.....	.70¢	
Universal.....	.30¢	
Victor.....	.60 & 10 & 2¢	
Walker's.....	.10¢	
Wolcott's.....	.60 & 10 & 5¢	
 Lumber Tools—		
See Tools, Lumber.		
 Lustro—		
Four-ounce bottles.....	* doz, \$1.75; * gross	
	....\$17.00	
 Machines.		
 Boring—		
Without Augers. Upright, Angular.		
Douglas.....	.65 & 50¢	
Jennings.....	.60 & 75¢	
Snell's, Rice's Pat. ....	.50 & 75¢ @ 50 & 10 & 5¢	
Other Machines.	2.25 & 25¢	
Boss, Carpenters' 3.60		
Boat, Ship Builders' 3.85		
Phillip's Patent with Auger.	7.00 7.50.....	
Millers Falls.....	7.50.....	
 Fluting—		
American, 5 in., \$3.00; 6 in., \$3.40; 7 in., \$4.50 each.....	.35¢	
Combined Fluter and Sash Iron.		
Crown, 4½ in., \$3.50; 6 in., \$4.00; 8 in., \$5 & 50 each.....	.35¢	
Crown Hand Fluter, Nos. 1, \$15.00; 2, \$12.50; 3, \$10.00; 4, \$8.25.....	.35¢	
Crown Jewel, 6 in.	\$3.50 each, .35¢	
Eagle, 3½-inch Rolls, \$2.15.....	.35¢	
Eagle, 5½-inch Rolls, \$2.85.....	.35¢	
Geneva Hand Fluter, White Metal, * doz \$12.25.....		
Knox, 6½-inch Rolls.....	\$3.25 each, .35¢	
Knox, 6-inch Rolls.....	\$3.60 each, .35¢	
shepard Hand Fluter, No. 85, * per doz \$1.50.....	.40¢	
shepard Hand Fluter No. 95, * doz \$3.00.....	.40¢	
shepard Hand Fluter, No. 110, * doz \$11.00.....	.40¢	
 Hoisting—		
Moore's Anti-Friction Differential Pulley Block.....	.20¢	
Moore's Hand Hoist, with Lock Brake. ....	.20¢	
Moore's Kope Differential Pulley Block.....	.60¢	
Mars & Beekley (Teal Patent).....	.30¢	
See also Blocks.		
 Washing—		
Fair and Square.....	* doz \$42.00	
Anthony Wayne, * doz, No. 1, \$42; No. 2, \$36; No. 3, \$42.....		
Wayne American.....	* doz \$36.00	
Weisell.....	* doz \$42.00	
Western Star, * doz, No. 2, \$36; No. 3 \$39		
 Mallets—		
B. & L. Block Co., Hickory & L. V. 30 @ 30 & 10¢		
Hickory.....	.20 & 10 @ 20 & 10 & 10¢	
Lignumvitae.....	.20 & 10 @ 20 & 10 & 10¢	
 Mattocks—	Regular list.	
60 & 10 @ 60 & 10 & 5¢		
 Measures—		
Standard Fibreware, No. 1, peck * dozen, \$3.50; ½ peck, \$3.00		
 Meat Cutters—		
See Cutters, Meat.		
 Menders, Harness—		
Per doz.....	\$.20	
 Milk Cans—	See Cans, Milk.	
 Mills—		
Coffee—		
Box and Side, List Jan. 1, 1888. 60 & 60 & 5¢ Net prices are often made which are lower than above discount.		
American, Enterprise Mfg. Co., list Jan. 17, 1889.....	.20¢	
The Swift, Lane Bros. ....	.30¢	
Waddell's New Box Mills, Ideal Brand, New List.....	.60¢	
 Mincing Knives—		
See Knives, Mincing.		
 Molasses Gates—		
See Gates, Molasses.		
 Money Drawers—		
See Drawers, Money.		
 Mowers, Lawn—		
Out of Season.		
 Muzzles—		
Safety.....	* doz, \$3.00, 25¢	
 Nails—		
Cut and Wire. See Trade Report.		
Wire Nails, Papered.		
Association List, May 1, '92.....	.85 & 5¢	
Tack Mfrs.' List.....	.70 & 10 @ 70 & 10¢	
Hungarian, Finishing, Upholsterers', &c. See Tacks.		
 Horse—		
Nos. 6 7 8 9 10		
A. C. ....	.25 & 23 23 21 21 16	
C. B. K. ....	.25 & 23 23 21 21 16	
 Large sizes.	* doz, 5¢	
Small sizes.	* doz, 5¢	
Silver & Co. (Covered). ....	.40¢	
 Fry—		
Standard List:		
No. 0 1 2 3 4		
* doz, \$3.00	.85 & 75 .45 & 25 .75 & 25	
* doz, .60	.60 .7 .8	
Polished, regular goods. ....	.75 & 75 .10 & 10¢	
Acme Fry Pans.....	.60 & 15¢	
 Dust—		
Steel Edge, No. 1.	* doz \$1.75	
 Roasting and Baking—		
Columbian, S. S. & Co. Nos. 10, 12, 20, 22.25; 30, \$2.50 each. ....	.60 & 10¢	
 Paper and Cloth—		
Sand and Emery—		
List April 19, 1886. 50 & 10 @ 50 & 10 & 10¢ Silber's Emery and Crocus Cloth....	.30¢	
 Pans—		
Apple—		
Advance.....	* doz \$4.75	
Baldwin.....	* doz 5.25	
Bonanza.....	each 5.00	
Daisy.....	* doz 4.00	
Dandy.....	each 7.50	
Empire.....	* doz 4.00	
Eureka, 1888.....	each 12.00	
Fairfax Bay State.....	* doz 12.00	
Favorite.....	each 5.00	
Gold Medal.....	* doz 4.00	
Improved Bay State.	* doz 2.00 & 20¢	
Little Star.....	* doz 4.50	
Monarch.....	each 18.50	
New Lighting.....	* doz 5.50	
Oriole.....	* doz 4.00	
Perfection.....	* doz 3.00	
Pomona.....	* doz 4.00	
Reading 72.....	* doz 4.25	
Reading 78.....	* doz 7.00	
Rocking Table.....	* doz 6.00	
Turn Table.....	* doz 4.50	
Victor.....	* doz 13.50	
Waverly.....	* doz 4.00	
White Mountain.....	* doz 4.00	
 Potato—		
Antrim Combination.....	* doz \$5.50	
Hoosier.....	* doz \$13.50	
Saratoga.....	* doz \$5.50	
White Mountain.....	* doz \$4.50	
 Pencils, Soapstone—		
See Crayons.		
 Pickers, Fruit—		
Prize Fruit Pickers.....	.50¢	
 Picks—		
Railroad or Adze Eye, 5 to 6, \$12.00; 6 to 7, \$13.00.....	.60 & 10 & 10 & 5¢	
 Picture Nails—		
See Nails, Picture.		
 Pinking Irons—		
See Irons, Pinking.		
 Pins—		
Bow—		
Humason, Beckley & Co. ....	.60 & 10¢	
Pack, Stow & W. Co. ....	.50 & 10 @ 50 & 10 & 5¢	
Sargent & Co.'s, \$17 and \$18.....	.60 & 10¢	
 Escutcheon—		
Iron, list Nov. 11, 1885. 50 & 10 @ 50 & 10 & 5¢ Brass.....	.50 & 10 & 5¢	
 Pipe, Wrought Iron—		
List April 13, 1883. 1½ and under, Plain. ....	.57 & 10¢	
1½ and under, Grooved. ....	.67 & 10¢	
1½ and over, Plain. ....	.67 & 10¢	
1½ and over, Galv. ....	.67 & 10¢	
Bitter Tubes, list Oct. 24, 1892. ....	.65 & 10¢	
Casing, list Nov. 18, 1892. ....	.52 & 10¢	
Drawn Seamless Steel Tubing, * doz 1.60.....		
Inserted Joints Casing, list Nov. 16, 1892. ....	.47 & 5¢	
Steel Boiler Tubes. ....	.27 & 5¢	
 Planes and Plane Irons—		
Wood Planes—		
Molding.....	* doz 4.00 & 10¢	
Bench, First quality.....	.45 & 10¢	
Bench, Second quality.....	.50 & 10¢	
Bailey's (Stanley R. & L. Co.) ....	.50 & 10¢	
 Iron Planes—		
Bailey's (Stanley R. & L. Co.) ....	.25 & 10¢	
Birmingham Planes Co. ....	.60 & 10¢ & 5¢	
Chaplin's Iron Planes. ....	.50 & 10 & 5¢	
Davis' Iron Planes. ....	.60 & 10 & 5¢	
Gage Tool Co.'s Self Setting. ....	.20 & 10 & 10¢	
Meriden Mat. Iron Co. ....	.50 & 10 & 5¢	
Miscellaneous Planes (Stanley R. & L. Co.) ....	.25 & 10¢	
Sargent's. ....	.60 & 10 & 10¢	
Standard Tool Co. ....	.60 & 10 & 10¢	
Steers' Iron Planes. ....	.50 & 10 & 5¢	
 Plane Irons—		
Auburn Thistle. ....	.30 & 10 @ 30 & 10 & 10¢	
Buck Bros. ....	.25 & 10 @ 35 & 25 to 1	
Butcher's. ....	.25 & 10 @ 35 & 25 to 1	
 Ohio.....	.30 & 10 @ 30 & 10 & 10¢	
Sandusky.....	.50 & 10¢	
Stanley F. & L. Co. ....	.50 & 10¢	
L. & I. J. White. ....	.25¢	
 Plates—		
Fellow.	* doz 6 & 10 @ 6 & 10¢	
 Pliers and Nippers—		
Button's Patent. ....	.60¢	
Crew's Pat. Wire Cutters. ....	.20¢	
Cronk's 8 in., \$15.00; 10 in. ....	.20¢	
Cronk's Button Pattern. ....	.50 & 10 @ 50¢	
Cronk's Carrier Pliers. ....	.60 & 10 & 5¢	
Eureka Pliers and Nippers. ....	.40¢	
Gas Pliers. ....	.60¢	
Gas Pliers, Custar's Nickel Plated. ....	.60 & 10¢	
Hill's Heavy Weight, * doz, \$3.00	.32 & 3¢	
Hill's Light Weight, * doz, \$2.75	.30 & 3¢	
Iron Clad. ....	.25 & 2.75	
Sidney Shepard & Co. ....	.25 & 2.75	
Buckets—See Well Buckets.		
 Indurated Fiber Ware		
Fire Pails, deep.	* doz \$4.80	
Fire Pails, round bottom.	* doz \$4.50	
Milk, 14 qt.	* doz \$4.50	
Stable, 14 qt.	* doz \$4.20	
Star Pails, 12 qt.	* doz \$4.20	
 Standard Fiber Ware—		
Plain.		
Deord.		
Buggy Pails.	\$3.00	
Chamber Pails, 14 qt.	\$4.00	
Dairy Pails, 14 qt.	\$3.75	
Fire Pails, No. 1, 12 qt.	\$3.75	
Fire Pails, No. 2, 14 qt.	\$4.25	
Horse Pails.	\$4.00	
Slop Jars (bal. trap).	7.50	
Sugar Pails.	5.00	
Water Pails, 12 qt.	3.15	
 Standard Fiber Ware—		
Plain.		
Plain, Deord.		
Russell's Parallel.		
 Plumbs and Levels—		
Regular List. ....	.75 & 10 @ 75 & 10 & 10¢	
Cook's. ....	.40 & 10¢	
Davis' Inclinometers. ....	.10 & 10¢	
Davis Iron Levels. ....	.30¢	
Diston's. ....	.50¢	
Pocket Levels. ....	.70 & 10 @ 70 & 10 & 10¢	
Stanley's Parallel. ....	.20 & 10¢	
Stanley's Handy. ....	.20 & 10¢	
 Poachers, Egg—		
Buffalo Steam Egg Poachers.	* doz .30	
No. 1, \$6.00; No. 2, \$9.00. ....	.33 & 1/2	
Silver & Co. 6-Ring.	* doz, \$4.00; 3-Ring.	
	\$2.00	
 Pokes, Animal—		
Bishop's American.	* doz \$3.00	
Bishop's I. X. L.	* doz \$6.00	
Bishop's Monarch.	* doz \$4.50	
Bishop's Pioneer.	* doz \$4.00	
Bolding.	* doz \$6.00	
Buckeye, Single Stake.	* doz \$2.75	
Eagle, Double Stake.	* doz \$5.75	
Eagle, Single Stake.	* doz \$3.75	
Metallic Horse Poke.	* doz \$6.00	
 Police Goods—		
Dale's Improved Handcuffs; 2 Hands, Polished, * doz \$48.00; Nickel, \$67.00; 3 hands, Polished, * doz \$72.00; Nickel, \$84.00. ....	.25¢	
J. P. Lovell's Police Goods. ....	.25¢	
R. I. Tool Co., Handcuffs, \$10.00	* doz 10¢	
R. I. Tool Co., Leg Irons, \$25.00	* doz 10¢	
Tower's. ....	.25¢	
 Polish—		
Metal—		
Gaston's Silver Compound. ....	.33 & 1/2	
Prestoline. ....	.30¢	
Prestoline Paste. ....	.33 & 1/2	
 Stove—		
Black Eagle Benzine Paste, 5 and 10 lb. cans. ....	.12 & 1/2	
Black Flag.	* gro \$7.20	
Black Flag, liquid, in bottles, * gro \$8.00		
Black Jack Water Paste, 5 and 10 lb. cans. ....	.12 & 1/2	
Bonnell's Liquid Stove Polish.	* gro \$9.00	
Bonnell's Paste Stove Polish.	* gro \$8.00	
Bryton's Noon Day.	* gro \$13.00	
Crown Paste. ....	.50 & 10 @ 5 & 10 lb. pails.	
Crown Paste. ....	.50 & 10 @ 5 & 10 lb. cans.	
Diamond O. K. Enamel.	* gro \$19.00	
Diamond Rock Nickel Cleaner.	* gro \$10.20	
Joseph Dixon's.	* gro, \$6.00; 10¢	
John's Plumbeago.	* gro \$2.50	
Fireside.	* gro \$2.50	
Gem.	* gro, \$4.50, 10¢	
Gold Medals.	* gro, \$6.00, 25¢	
Japanese.	* gro, \$3.50	
Jet Black.	* gro \$3.50	</

Pullers Nail-

Scranton..... \$ per doz. \$18.00, 33¢
Giant, No. 1..... \$ per doz. \$18.00, 10¢
Giant, No. 2..... \$ per doz. \$15.00, 10¢
Pelican..... \$ per doz. \$9.00, 25¢
Eclipse..... \$ per doz. \$24.00, 40¢
Economy..... \$ per doz. \$6.00

Pulleys-

Hot House Awning, &c..... 66¢ to 70¢
Japanned Screw..... 60¢ to 10¢ to 10¢
Brass Screw..... 70¢
Japanned Side..... 60¢ to 10¢ to 10¢
Moore's Side, Anti Friction..... 50¢
Moore's Ceiling or End, Anti Friction..... 40¢
Moore's Dumb Waiter, Anti Friction..... 50¢
Moore's Electric Light..... 83¢
Japanned Clothes Line..... 60¢ to 10¢
Hay Fork, Solid Eye, \$4.00; Swivel, \$4.50..... 50¢ to 10¢ to 10¢ to 10¢
Hay Fork, "Anti Friction," 5 in. solid, \$5.70..... 50¢
Hay Fork, "F" Common and Patent Bushed..... 20¢
Hay Fork, Tarbox Pat. Iron..... 20¢
Hay Fork, Reed's Self-Lubricating..... 60¢
Hay Fork, Moore's Anti Friction 5 in. Wheel, \$ per doz. \$12.00..... 40¢
Shade Rack..... 45¢
Tackel Blocks—See Blocks.
Shepard's Niagara, No. 25. \$ per doz 23¢ net
Sash (Auger Mortise).
Common Sense..... 60¢
Empire..... 60¢
Ideal, Nos. 2, 4, 10 & 15 { 60¢ less 1¢ \$ per doz net.
Acme..... }
Star..... }
On bbl. lots extra 5¢.
Ideal, Nos. 25 and 55. \$ per doz. 22¢ net.

Pumps-

Cistern, Best Makers..... 60¢ to 80¢ to 10¢
Pitcher Spout, Best Makers..... 67¢ to 70¢
Pitcher Spout, Cheaper G'ds. 75¢ to 75¢ to 10¢

Punches-

Saddler's or Drive, good, \$ per doz. 60¢ to 95¢
Bemis & Call Co.'s Cast Steel Drive, 50¢ to 65¢
Bemis & Call Co.'s Springfield Socket, 65¢
Spring, good quality, \$ per doz. \$2.50 to \$2.60
Spring, Watch Case, Pat. 15¢
Bemis & Call Co.'s Spring..... 50¢ to 65¢
Solid Timmers', F. S. & W. Co., \$ per doz. 55¢
\$1.44
Timers' Hollow Punches, F. S. & W. Co..... 20¢ to 25¢
Rice Hand Punches..... 15¢
Avery's Revolving..... 40¢
Avery's Sawset and Punch—See Sawsets
Niagara Hollow Punches..... 20¢ to 25¢
Niagara Solid Punches..... 55¢

Rail-

Sliding Door, W't Brass, \$ per ft. 35¢ to 40¢
Sliding Door, Bronzed W't Iron, \$ per ft. 7¢
Sliding Door, Iron, Painted, \$ per ft. 4¢, 10¢
Door, Light, In. 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, 226, 228, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252, 254, 256, 258, 260, 262, 264, 266, 268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 314, 316, 318, 320, 322, 324, 326, 328, 330, 332, 334, 336, 338, 340, 342, 344, 346, 348, 350, 352, 354, 356, 358, 360, 362, 364, 366, 368, 370, 372, 374, 376, 378, 380, 382, 384, 386, 388, 390, 392, 394, 396, 398, 400, 402, 404, 406, 408, 410, 412, 414, 416, 418, 420, 422, 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824, 826, 828, 830, 832, 834, 836, 838, 840, 842, 844, 846, 848, 850, 852, 854, 856, 858, 860, 862, 864, 866, 868, 870, 872, 874, 876, 878, 880, 882, 884, 886, 888, 890, 892, 894, 896, 898, 900, 902, 904, 906, 908, 910, 912, 914, 916, 918, 920, 922, 924, 926, 928, 930, 932, 934, 936, 938, 940, 942, 944, 946, 948, 950, 952, 954, 956, 958, 960, 962, 964, 966, 968, 970, 972, 974, 976, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000, 1002, 1004, 1006, 1008, 1010, 1012, 1014, 1016, 1018, 1020, 1022, 1024, 1026, 1028, 1030, 1032, 1034, 1036, 1038, 1040, 1042, 1044, 1046, 1048, 1050, 1052, 1054, 1056, 1058, 1060, 1062, 1064, 1066, 1068, 1070, 1072, 1074, 1076, 1078, 1080, 1082, 1084, 1086, 1088, 1090, 1092, 1094, 1096, 1098, 1100, 1102, 1104, 1106, 1108, 1110, 1112, 1114, 1116, 1118, 1120, 1122, 1124, 1126, 1128, 1130, 1132, 1134, 1136, 1138, 1140, 1142, 1144, 1146, 1148, 1150, 1152, 1154, 1156, 1158, 1160, 1162, 1164, 1166, 1168, 1170, 1172, 1174, 1176, 1178, 1180, 1182, 1184, 1186, 1188, 1190, 1192, 1194, 1196, 1198, 1200, 1202, 1204, 1206, 1208, 1210, 1212, 1214, 1216, 1218, 1220, 1222, 1224, 1226, 1228, 1230, 1232, 1234, 1236, 1238, 1240, 1242, 1244, 1246, 1248, 1250, 1252, 1254, 1256, 1258, 1260, 1262, 1264, 1266, 1268, 1270, 1272, 1274, 1276, 1278, 1280, 1282, 1284, 1286, 1288, 1290, 1292, 1294, 1296, 1298, 1300, 1302, 1304, 1306, 1308, 1310, 1312, 1314, 1316, 1318, 1320, 1322, 1324, 1326, 1328, 1330, 1332, 1334, 1336, 1338, 1340, 1342, 1344, 1346, 1348, 1350, 1352, 1354, 1356, 1358, 1360, 1362, 1364, 1366, 1368, 1370, 1372, 1374, 1376, 1378, 1380, 1382, 1384, 1386, 1388, 1390, 1392, 1394, 1396, 1398, 1400, 1402, 1404, 1406, 1408, 1410, 1412, 1414, 1416, 1418, 1420, 1422, 1424, 1426, 1428, 1430, 1432, 1434, 1436, 1438, 1440, 1442, 1444, 1446, 1448, 1450, 1452, 1454, 1456, 1458, 1460, 1462, 1464, 1466, 1468, 1470, 1472, 1474, 1476, 1478, 1480, 1482, 1484, 1486, 1488, 1490, 1492, 1494, 1496, 1498, 1500, 1502, 1504, 1506, 1508, 1510, 1512, 1514, 1516, 1518, 1520, 1522, 1524, 1526, 1528, 1530, 1532, 1534, 1536, 1538, 1540, 1542, 1544, 1546, 1548, 1550, 1552, 1554, 1556, 1558, 1560, 1562, 1564, 1566, 1568, 1570, 1572, 1574, 1576, 1578, 1580, 1582, 1584, 1586, 1588, 1590, 1592, 1594, 1596, 1598, 1600, 1602, 1604, 1606, 1608, 1610, 1612, 1614, 1616, 1618, 1620, 1622, 1624, 1626, 1628, 1630, 1632, 1634, 1636, 1638, 1640, 1642, 1644, 1646, 1648, 1650, 1652, 1654, 1656, 1658, 1660, 1662, 1664, 1666, 1668, 1670, 1672, 1674, 1676, 1678, 1680, 1682, 1684, 1686, 1688, 1690, 1692, 1694, 1696, 1698, 1700, 1702, 1704, 1706, 1708, 1710, 1712, 1714, 1716, 1718, 1720, 1722, 1724, 1726, 1728, 1730, 1732, 1734, 1736, 1738, 1740, 1742, 1744, 1746, 1748, 1750, 1752, 1754, 1756, 1758, 1760, 1762, 1764, 1766, 1768, 1770, 1772, 1774, 1776, 1778, 1780, 1782, 1784, 1786, 1788, 1790, 1792, 1794, 1796, 1798, 1800, 1802, 1804, 1806, 1808, 1810, 1812, 1814, 1816, 1818, 1820, 1822, 1824, 1826, 1828, 1830, 1832, 1834, 1836, 1838, 1840, 1842, 1844, 1846, 1848, 1850, 1852, 1854, 1856, 1858, 1860, 1862, 1864, 1866, 1868, 1870, 1872, 1874, 1876, 1878, 1880, 1882, 1884, 1886, 1888, 1890, 1892, 1894, 1896, 1898, 1900, 1902, 1904, 1906, 1908, 1910, 1912, 1914, 1916, 1918, 1920, 1922, 1924, 1926, 1928, 1930, 1932, 1934, 1936, 1938, 1940, 1942, 1944, 1946, 1948, 1950, 1952, 1954, 1956, 1958, 1960, 1962, 1964, 1966, 1968, 1970, 1972, 1974, 1976, 1978, 1980, 1982, 1984, 1986, 1988, 1990, 1992, 1994, 1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016, 2018, 2020, 2022, 2024, 2026, 2028, 2030, 2032, 2034, 2036, 2038, 2040, 2042, 2044, 2046, 2048, 2050, 2052, 2054, 2056, 2058, 2060, 2062, 2064, 2066, 2068, 2070, 2072, 2074, 2076, 2078, 2080, 2082, 2084, 2086, 2088, 2090, 2092, 2094, 2096, 2098, 2100, 2102, 2104, 2106, 2108, 2110, 2112, 2114, 2116, 2118, 2120, 2122, 2124, 2126, 2128, 2130, 2132, 2134, 2136, 2138, 2140, 2142, 2144, 2146, 2148, 2150, 2152, 2154, 2156, 2158, 2160, 2162, 2164, 2166, 2168, 2170, 2172, 2174, 2176, 2178, 2180, 2182, 2184, 2186, 2188, 2190, 2192, 2194, 2196, 2198, 2200, 2202, 2204, 2206, 2208, 2210, 2212, 2214, 2216, 2218, 2220, 2222, 2224, 2226, 2228, 2230, 2232, 2234, 2236, 2238, 2240, 2242, 2244, 2246, 2248, 2250, 2252, 2254, 2256, 2258, 2260, 2262, 2264, 2266, 2268, 2270, 2272, 2274, 2276, 2278, 2280, 2282, 2284, 2286, 2288, 2290, 2292, 2294, 2296, 2298, 2300, 2302, 2304, 2306, 2308, 2310, 2312, 2314, 2316, 2318, 2320, 2322, 2324, 2326, 2328, 2330, 2332, 2334, 2336, 2338, 2340, 2342, 2344, 2346, 2348, 2350, 2352, 2354, 2356, 2358, 2360, 2362, 2364, 2366, 2368, 2370, 2372, 2374, 2376, 2378, 2380, 2382, 2384, 2386, 2388, 2390, 2392, 2394, 2396, 2398, 2400, 2402, 2404, 2406, 2408, 2410, 2412, 2414, 2416, 2418, 2420, 2422, 2424, 2426, 2428, 2430, 2432, 2434, 2436, 2438, 2440, 2442, 2444, 2446, 2448, 2450, 2452, 2454, 2456, 2458, 2460, 2462, 2464, 2466, 2468, 2470, 2472, 2474, 2476, 2478, 2480, 2482, 2484, 2486, 2488, 2490, 2492, 2494, 2496, 2498, 2500, 2502, 2504, 2506, 2508, 2510, 2512, 2514, 2516, 2518, 2520, 2522, 2524, 2526, 2528, 2530, 2532, 2534, 2536, 2538, 2540, 2542, 2544, 2546, 2548, 2550, 2552, 2554, 2556, 2558, 2560, 2562, 2564, 2566, 2568, 2570, 2572, 2574, 2576, 2578, 2580, 2582, 2584, 2586, 2588, 2590, 2592, 2594, 2596, 2598, 2600, 2602, 2604, 2606, 2608, 2610, 2612, 2614, 2616, 2618, 2620, 2622, 2624, 2626, 2628, 2630, 2632, 2634, 2636, 2638, 2640, 2642, 2644, 2646, 2648, 2650, 2652, 2654, 2656, 2658, 2660, 2662, 2664, 2666, 2668, 2670, 2672, 2674, 2676, 2678, 2680, 2682, 2684, 2686, 2688, 2690, 2692, 2694, 2696, 2698, 2700, 2702, 2704, 2706, 2708, 2710, 2712, 2714, 2716, 2718, 2720, 2722, 2724, 2726, 2728, 2730, 2732, 2734, 2736, 2738, 2740, 2742, 2744, 2746, 2748, 2750, 2752, 2754, 2756, 2758, 2760, 2762, 2764, 2766, 2768, 2770, 2772, 2774, 2776, 2778, 2780, 2782, 2784, 2786, 2788, 2790, 2792, 2794, 2796, 2798, 2800, 2802, 2804, 2806, 2808, 2810, 2812, 2814, 2816, 2818, 2820, 2822, 2824, 2826, 2828, 2830, 2832, 2834, 2836, 2838, 2840, 2842, 2844, 2846, 2848, 2850, 2852, 2854, 2856, 2858, 2860, 2862, 2864, 2866, 2868, 2870, 2872, 2874, 2876, 2878, 2880, 2882, 2884, 2886, 2888, 2890, 2892, 2894, 2896, 2898, 2900, 2902, 2904, 2906, 2908, 2910, 2912, 2914, 2916, 2918, 2920, 2922, 2924, 2926, 2928, 2930, 2932, 2934, 2936, 2938, 2940, 2942, 2944, 2946, 2948, 2950, 2952, 2954, 2956, 2958, 2960, 2962, 2964, 2966, 2968, 2970, 2972, 2974, 2976, 2978, 2980, 2982, 2984, 2986, 2988, 2990, 2992, 2994, 2996, 2998, 3000, 3002, 3004, 3006, 3008, 3010, 3012, 3014, 3016, 3018, 3020, 3022, 3024, 3026, 3028, 3030, 3032, 3034, 3036, 3038, 3040, 3042, 3044, 3046, 3048, 3050, 3052, 3054, 3056, 3058, 3060, 3062, 3064, 3066, 3068, 3070, 3072, 3074, 3076, 3078, 3080, 3082, 3084, 3086, 3088, 3090, 3092, 3094, 3096, 3098, 3100, 3102, 3104, 3106, 3108, 3110, 3112, 3114, 3116, 3118, 3120, 3122, 3124, 3126, 3128, 3130, 3132, 3134, 3136, 3138, 3140, 3142, 3144, 3146, 3148, 3150, 3152, 3154, 3156, 3158, 3160, 3162, 3164, 3166, 3168, 3170, 3172, 3174, 3176, 3178, 3180, 3182, 3184, 3186, 3188, 3190, 3192, 3194, 3196, 3198, 3200, 3202, 3204, 3206, 3208, 3210, 3212, 3214, 3216, 3218, 3220, 3222, 3224, 3226, 3228, 3230, 3232, 3234, 3236, 3238, 3240, 3242, 3244, 3246, 3248, 3250, 3252, 3254, 3256, 3258, 3260, 3262, 3264, 3266, 3268, 3270, 3272, 3274, 3276, 3278, 3280, 3282, 3284, 3286, 3288, 3290, 3292, 3294, 3296, 3298, 3300, 3302, 3304, 3306, 3308, 3310, 3312, 3314, 3316, 3318, 3320, 3322, 3324, 3326, 3328, 3330, 3332, 3334, 3336, 3338, 3340, 3342, 3344, 3346, 3348, 3350, 3352, 3354, 3356, 3358, 3360, 3362, 3364, 3366, 3368, 3370, 3372, 3374, 3376, 3378, 3380, 3382, 3384, 3386, 3388, 3390, 3392, 3394, 3396, 3398, 3400, 3402, 3404, 3406, 3408, 3410, 3412, 3414, 3416, 3418, 3420, 3422, 3424, 3426, 3428, 3430, 3432, 3434, 3436

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.)..... 65¢
Pitch's (Bristol)..... 50¢ & 10¢
Hotchkiss..... 10¢
Andrews..... 50¢
Sargent's Patent Guarded..... 70¢ & 10¢
German, new list..... 40¢ & 10¢
Covert..... 50¢ & 10¢ & 25¢
Covert, New Patent..... 50¢ & 10¢ & 25¢
Covert, New R. E. 60¢ & 10¢ & 25¢
Covered Spring..... 60¢ & 10¢ & 10¢
Covert's Saddlery Works' Triumph..... 33¢ & 50¢
John Prots Snaps..... 75¢ & 75¢
Kelleys & Woolworth's Steel Harness.... 50¢ & 10¢ & 60¢

Snaths—

Secthe..... 50¢ & 25¢ & 25¢ & 25¢

Soldering Irons—

See Irons, Soldering.

Splittoons, Cuspidors, &c.—

Standard Fiberware—
Cuspidors, 8½-inch, \$ doz., No. 5, 85¢; No. 5½, 85¢
Splittoons, Daisy, 8-inch, No. 1, 1¢; 10 and 11 inch, 85¢

Spoke Shaves—

See Shaves, Spoke.

Spoke Trimmers—

See Trimmers, Spoke.

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp, Co.'s list..... 70¢ & 10¢
Solid Table and Tea, Cen. Stamp, Co.'s list..... 70¢ & 10¢
Buffalo, S. S. & Co. 33¢ & 25¢

Silver Plated—

4 months or 5% cash 30 days:
Meriden Brit. Co., Rogers..... 40¢ & 15¢
Rogers & Hamilton..... 40¢ & 15¢
C. Rogers & Bros. 40¢ & 15¢
Rogers & Bros. 40¢ & 15¢
Reed & Barton..... 40¢ & 10¢ & 5¢
Wm. Rogers Mfg. Co. 40¢ & 15¢
Simpson, Hall, Miller & Co. 40¢ & 15¢
Holmes & Edwards Silver Co. 40¢ & 15¢
L. Boardman & Son 50¢ & 12½¢

Miscellaneous—

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver..... 50¢ & 10¢ & 5¢
No. 30 Silver Metal..... 50¢ & 10¢ & 5¢
No. 24 German Silver..... 50¢ & 10¢ & 5¢
No. 50 Nickel Silver..... 50¢ & 5¢
No. 49 Nickel Silver..... 50¢ & 10¢ & 5¢
Wm. Rogers Mfg. Co.:
Rogers' Silver Metal..... 50¢ & 10¢ & 5¢
18% Rogers' German Silver..... 60¢ & 8¢
22% Rogers' Nickel Silver..... 50¢ & 8¢
Rogers & Hamilton:
Steel Goods..... 40¢ & 10¢ & 5¢
Cimetaar, Flatware..... 40¢ & 15½¢
Cimetaar, Steel Goods..... 40¢ & 10¢
Crown Hamilton, Flatware and Cutlery..... 40¢ & 10¢
German Silver..... 60¢ & 10¢ & 5¢
Nickel Silver..... 60¢ & 6¢ & 10¢ & 5¢ cash
Britannia..... 60¢ & 6¢ & 10¢ & 5¢
Boardman's Nickel Silver, list July 1, 1893..... 60¢ & 7½¢ & 12½¢
Boardman's Britannia Spoons, case lots..... 60¢ & 5¢ cash

Springs—Door—

Torre's Rod, 39 in., \$ doz. \$1.20 & 12¢
Warner's No. 1, \$ doz. \$1.50; No. 2, \$3.40..... 55¢ & 58¢ & 10¢
Gem (Coll.), list April 19, 1888..... 50¢ & 10¢
Star (Coll.), list April 19, 1888..... 50¢ & 10¢
Victor (Coll.) 60¢ & 10¢ & 10¢ & 5¢
Champion (Coll.) 60¢ & 10¢ & 10¢ & 5¢
Cowell's, No. 1, \$ doz. \$1.80; No. 2, \$1.50..... 50¢ & 10¢ & 10¢
Rubber, complete, \$ doz. \$4.50..... 55¢ & 10¢
Hercules 60¢ & 10¢ & 10¢
Phoenix..... 33½¢

Carriage, Wagon, &c.—
Elliptic, Concord, Platform and Half Scroll..... 60¢ & 10¢ & 10¢ & 10¢ & 10¢ or net prices
Clif' Bolster Springs..... 25¢

Squares—

Steel and Iron..... 80¢ & 10¢ & 10¢ & 25¢
Nickel-Plated..... 80¢ & 10¢ & 10¢ & 25¢
Try Square and T Bevels..... 30¢ & 10¢ & 10¢
Diston's Try Square and T Bevels..... 50¢
Winterbottom's Try and Mitre..... 30¢ & 10¢
Starrett's Micrometer Caliper Squares..... 25¢

Avery's Flush Bevel Squares..... 40¢
Avery's Bevel Protractor..... 60¢

Squeezers—

Fodder—
Blair's..... \$ doz. \$2.00
Blair's "Olimax"..... \$ doz. \$1.25

Lemon—

Porcelain Lined, No. 1, \$ doz. \$6.00..... 25¢ & 30¢
Wood, No. 2, \$ doz. \$3.00, 35¢
Wood, Common..... \$ doz. \$1.70 & 17¢
Dunlap's Improved..... \$ doz. \$7.50, 20¢
Samms', No. 1, \$5.00; No. 2, \$8.12, \$18.50 & 20¢
Jennings' Star..... \$ doz. \$2.50
The Boss..... \$ doz. \$2.50
Dean's, No. 1, \$ doz. \$8.50; No. 2, \$8.38; \$1.90; Queen, \$2.50..... 50¢ & 50¢ & 5¢

Little Giant—

King..... 40¢ & 25¢
Hotchkiss Straight Flash..... \$ doz. \$12.00
Silver & Co. Glass..... \$ gro. \$9.00

Standard Fiber Ware—
See Ware, Standard Fiber.

Staples—

Barbed Blind, ½ in. and larger, \$ in. 7¢ & 7½¢
Barbed Blind, ½ in. \$ in. 8¢ & 8½¢
Fence Staples, Galvanized, Same price
Fence Staples, Plain, as Barbed Wire
See Frd. Rep Grand Crossing Tack Co.'s list..... 75¢ & 10¢

Steelyards—

Stocks and Dies—
Blacksmith's:
Waterford Goods..... 85¢
Butterfield's Goods..... 85¢
Lightning Screw Plate..... 25¢ & 30¢
Reece's New Screw Plates..... 25¢ & 30¢
Reversible Ratchet..... 80¢
Gardner..... 25¢
Green River..... 30¢ & 30¢

Steps Bench—

Morrill's, \$ doz. No. 1, \$10.00; No. 2, \$11.00..... 40¢ & 10¢
Hotchkiss'..... \$ doz. \$5.10 & 10¢ & 10¢
Weston's, No. 1, \$10. No. 2, \$9, 25¢ & 10¢ & 5¢

McGill's, # doz. \$8.....

10¢

Cincinnati.....

25¢ & 10¢

Terrill's No. 1 and 2, \$ doz. \$3; No. 3, \$3.50.....

30¢

Millers Falls.....

25¢

Stearns'.....

20¢ & 10¢

Stone—

Stones, Grind—See Grindstones.

Scythe Stones—

Pike Mfg. Co., list April, 1892.....

83¢

Cleveland Stone Co., list Nov. 1892.....

83¢

Oil Stones, &c.—

Pike Mfg. Co.:

Hindostan No. 1, \$ doz. \$8.....

10¢

Sand Stone, # doz. \$8.....

10¢

Turkey Oil Stone, 4 to 8 in.

40¢ & 40¢

Turkey Slips, \$ doz. \$2.00.....

10¢

Lily White Washita.....

60¢

Rosy Red Washita.....

60¢

Washita Stone, Extra.....

50¢

Washita Stone, No. 2.....

40¢

Lily White Slips.....

90¢

Washita Slips, Extra.....

80¢

Washita Slips, No. 1.....

70¢

Arkansas Stone, No. 1, 3 to 5 in.

\$2.80

Arkansas Stone, No. 1 ½ to 8 in.

\$3.50

Lake Superior.....

\$1.34

Lake Superior Slips.....

\$1.20

Stove Polish—

See Polish, Stove.

Stretchers Carpet—

Cast Steel, Polished.....

\$ doz. \$2.22

Cast Iron, Steel Points.....

\$ doz. 75¢ & 80¢

Socket.....

\$ doz. \$1.75

Ballard's.....

\$ doz. \$2.50 & 10¢

Straps, Razor—

Genuine Emerson.....

60¢ & 60¢

Imitation.....

50¢ & 50¢

Torrey's.....

Net prices

Badger's Belt and Com.

\$ doz. \$2.00

Lamont Combination.....

\$ doz. \$4.00

Jordan's Pat. Padded, list Nov. 1, '89, 50¢

Electric Cutlery Co.

Net prices

Campbell Cutlery Co.

Net prices

Stuffer, Sausage—

Miles' Challenge, \$ doz. \$20.....

50¢ & 50¢ & 5¢

Perry, \$ doz. No. 1, \$15.00; No. 0, \$12.00.....

\$21.00.....

Draw Cut No. 4, each \$30.00.....

20¢

Enterprise Mfg. Co., list Jan. 17, '89, 50¢

Silver's.....

40¢ & 10¢

Sweepers, Carpet and Lawn—

Carpet—

Bissell No. 5, \$ doz. \$17.00.....

Bissell No. 8, \$ doz. \$20.00.....

Bissell, Grand.....

\$ doz. \$36.00.....

Standard.....

\$ doz. \$24.00.....

Domestic.....

\$ doz. \$21.00.....

Domestic, No. 2.....

\$ doz. \$22.00.....

Grand Rapids.....

\$ doz. \$24.00.....

Crown Jewel, No. 1, \$18.00; No. 2, \$19.00; No. 3, \$20.00.....

\$ doz. \$15.00.....

Improved Parlor Queen, \$ doz. \$16.00.....

Nickel.....

\$ doz. \$27.00.....

Japanned.....

\$ doz. \$24.00.....

Excelsior.....

\$ doz. \$22.00.....

Parlor.....

\$ doz. \$20.00.....

Housewife's Delight.....

\$ doz. \$15.00.....

Lady's Friend.....

\$ doz. \$16.00.....

Advance.....

\$ doz. \$18.00.....

Our Leader.....

\$ doz. \$19.00.....

Triumph.....

\$ doz. \$20.00.....

Parlor Queen.....

\$ doz. \$20.00.....

Housewife's Delight.....

\$ doz. \$15.00.....

Lady's Friend No. 2.....

\$ doz. \$16.00.....

Reliable.....

\$ doz. \$24.00.....

Rapid Jap'd, \$ doz. \$22.00; Nickel, \$ doz. \$24.00.....

Aome.....

\$ doz. \$26.00.....

Imperial.....

\$ doz. \$28.00.....

Grand Republic.....

\$ doz. \$30.00.....

Jap'd, \$ doz. \$30.00; Nickel, \$33.00.....

Banner.....

Jap'd, \$ doz. \$22.00; Nickel, \$24.00.....

The Star.....

\$ doz. \$21.00.....

Reliable.....

\$ doz. \$22.00.....

Our Own.....

\$ doz. \$27.00.....

Model.....

\$ doz. \$27.00.....

Goshen Sweeper Company, Grand Rapids, Mich., make the following re-bates:
5 dozen in 6 months..... \$ doz. \$1.00
10 dozen in 6 months..... \$ doz. \$2.00

Exception L.F., when 10 dozen price is \$18.50, and 25 dozen \$18.00.

Lawn—

Thompson Mfg. Co. 80¢

Thompson's, Game—

Newhouse.....

40¢ & 40¢ & 5¢

Oneida Pattern.....

75¢ & 10¢

Game, Blake's Patent.....

40¢ & 10¢

Mouse and Rat—

Mouse Wood, Choker, \$ doz. holes, 9¢ & 10¢

Mouse, Round Wire, \$ doz. 15¢ & 16¢

Mouse, Cage, Wire, \$ doz. 25¢ & 10¢

Mouse, Caf-eh-an-alive, \$ doz. 25¢ & 15¢

Mouse, Bonanza, \$ doz. 9¢ & 10¢

Rat, Decoy, \$ gr. \$10.00 & 10¢

Ideal, \$ gr. \$10.00 & 10¢

Cyclone, \$ gr. \$5.25

Hotchkiss Metallic Mouse, 5-hole traps, \$ doz. 75¢; in full cases, \$ doz. \$60.00

Hotchkiss Imp. Rat Killer, \$ gro. \$18.50

Hotchkiss New Rat Killer, \$ gro. \$16.50

Schuyler's Rat Killer, \$ gro. \$15.00

Dandy, \$ doz. \$1.75

Waddel's Go Bang, \$ gro. \$12.50

Fly—

Harper, Champion or Paragon, \$ doz. \$1.75, \$16.50

Balloon, Globe or Acme, \$ doz. \$1.50 & 10¢

Triers—

Butter and Cheese, \$ doz. 25¢

Trimmers, Spike—

Bonney's.....

\$ doz. \$10.00, 50¢

Stearns', \$ doz. \$12.00, 50¢ & 10¢

Ives', No. 1, \$15.00; No. 2, \$12.00, \$ doz.

55¢ & 10¢

Douglas', \$ doz. \$9.00, 20¢

Cincinnati.....

Whips

American Whip Co.: Length.	4 $\frac{1}{2}$	5	5 $\frac{1}{2}$	6	6 $\frac{1}{2}$	7	7 $\frac{1}{2}$	8 ft.
X. L. Whalebone Driving.	\$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Eureka, Two-thirds Whalebone.	15.00	16.50	18.00	20.00	....	....	....	....
Bull Bone, Half-length Whale bone.	....	....	....	....	....	....	....	....
American Standard.	8.00	8.50	9.50	10.50	12.00	15.50	15.00	16.50
True Grip, Raw Hide Center.	6.00	6.00	6.50	7.00	7.50	9.00	....	....
New Name, Stocked Java, Black and Wine Colors.	....	....	....	....	6.00	....	....	....
Americus, 98 Pen Whip.	....	....	....	....	6.00	....	....	....
Gents' Light Driving No. 111.	....	....	6.00	....	....	....	....	....
Gents' Light Driving No. 106.	....	....	5.00	....	....	....	....	....
Hand-made Stocked Java No. 108.	....	....	8.75	4.00	....	....	....	....
A large variety of cheaper grades.	....	....	....	....	50¢ to \$1.00	....	....	....
Team Whips.	....	....	....	....	....	....	32.00 to 37.50	....
Toy Whips.	....	....	....	....	....	....	....	....
Hardware Assortment, 10/American, 75 Whips for \$50.00.	....	....	....	....	....	....	....	....

Per dozen.

Wire and Wire Goods—**Iron—**

Market,	Br. & Ann'd., Nos. 0 to 18.	75¢ to 10¢	75¢ to 10¢	50¢ to 10¢	often given
Cop'd., Nos. 0 to 18.	75¢ to 10¢	75¢ to 10¢	50¢ to 10¢	often given	and low net
Galv., Nos. 0 to 18.	75¢ to 10¢	75¢ to 10¢	50¢ to 10¢	Prices often	made on
Tin'd., Tin'd. List, Nos. 0 to 18.	75¢ to 10¢	75¢ to 10¢	50¢ to 10¢	large lots.	Spools.

Stone,	Br. and Ann'd., Nos. 16 to 18.	80¢	Extra 10%	....	....
	Nos. 19 to 26.	80¢ to 15¢	often given.	....	....
	Nos. 27 to 36.	82¢ to 15¢	....	....	....
Tinned Broon Wire,	18 to 21, W. D.	44¢	....	....	....
Galvanized Fence.	....	75¢ to 10¢	....	....	....
Brass, List Jan. 18, 1884.	....	40¢ to 50¢	....	....	....
Copper, List Jan. 18, 1884.	....	40¢ to 50¢	....	....	....
Annealed Wire on Spools.	....	60¢	....	....	....
Malin's An'aled & Tin'd. on Spools.	....	60¢ to 80¢	....	....	....
Malin's Brass and Cop. on Spools.	....	50¢ to 80¢	....	....	....
Ossawan Mills, An'd. and Timed on Spools.	....	60¢ to 10¢	....	....	....

Ossawan Mills, Brass and Copper on Spools.	50¢ to 10¢	....	....	....	....
Tate's Spooled Tin'd. & Annealed.	60¢ to 5¢	....	....	....	....
Tate's Spooled Cop. and Brass.	50¢	....	....	....	....
Cast Steel Wire.	50¢	....	....	....	....
Scuba' Steel Wire.	50¢ to 10¢	....	....	....	....
Steel Music Wire, 12 to 30, imported.	60¢ to 70¢	W. D.	....	....	....
Wire Clothes Line, see Lines.	....	....	....	....	....
Wire Picture Cord, see Cord.	....	....	....	....	....

Bright Wire Goods—	Standard list.	....	....	....	....
Wire Cloth and Netting—	Painted Screen Cloth 100 ft.	....	....	....	....
Galvanized Wire Netting.	....	....	....	....	....
	75¢ to 10¢	75¢ to 10¢	....	....	....

Wire Barb—	See Trade Report.	....	....	....	....
Wire Rope—See Rope, Wire.	....	....	....	....	....
Wrenches—	....	....	....	....	....
American Adjustable.	40¢	....	....	....	....
Baxter's Adjustable "S".	40¢ to 10¢	....	....	....	....
Baxter's Diagonal.	60¢	....	....	....	....
Cox' Genuine.	50¢ to 50¢ to 10¢	....	....	....	....
Cox' "Mechanics".	50¢ to 10¢ to 10¢	....	....	....	....
Girard Standard.	65¢ to 10¢ to 10¢	....	....	....	....
Lamson & Sessions' Engineers.	60¢ to 10¢ to 10¢	....	....	....	....
Lamson & Sessions' Standard.	70¢ to 10¢	....	....	....	....
P. S. & W. Agricultural.	75¢ to 10¢ to 80¢	....	....	....	....
Girard Agricultural.	75¢ to 10¢ to 80¢	....	....	....	....
Lamson & Sessions' Agric'l.	75¢ to 10¢ to 80¢	....	....	....	....
W. & B. Diamond.	75¢ to 10¢ to 80¢	....	....	....	....

Bemis & Call's:	Pat. Combination Bright.	40¢ to 5¢	....	....	....
	Pat. Combination Black.	40¢ to 10¢	....	....	....
	Merrick's Pattern.	45¢	....	....	....
	Brigg's Pattern.	30¢ to 10¢	....	....	....
	Cylinder or Gas Pipe.	45¢ to 5¢	....	....	....
	No. 8 Pipe.	55¢	....	....	....
	Aiken's Pocket (Bright).	60¢ to 50¢ to 10¢	....	....	....
	The Favorite Pocket.	5¢ doz. \$4.00 to 40¢	....	....	....
	Webster's Pat. Combination.	25¢	....	....	....
	Boardman's.	30¢	....	....	....
	Always Ready.	25¢ to 5¢	....	....	....
	Alligator.	50¢	....	....	....
	Donohue's Engineer.	20¢ to 10¢	....	....	....
	Eagle.	50¢ to 10¢	....	....	....
	Acme, Bright.	50¢ to 25¢	....	....	....
	Acme, Nickle'd.	40¢ to 25¢	....	....	....
	Hercules.	70¢ to 70¢ to 5¢	....	....	....
	Walker's.	55¢ to 3¢	....	....	....
	Diamond Steel.	55¢ to 3¢	....	....	....
	Cincinnati Brace Wrenches.	25¢ to 10¢	....	....	....
	Taft's Vise Wrench.	55¢ to 10¢ to 3¢	....	....	....

Wringers, Clothes—

Am. Wringer Co.'s List July 1, '93.	25¢ cash	....	....	....	....
Zinc, French, Red Seal.	75¢ to ..	....	....	....	....
Zinc, French, Green Seal.	9¢ to ..	....	....	....	....
Zinc, French, V. M. X.	9¢ to ..	....	....	....	....
Zinc, Antwerp, Red Seal.	75¢ to ..	....	....	....	....
Zinc, Antwerp, Green Seal.	75¢ to ..	....	....	....	....
Zinc, German, L. Z. O.	65¢ to ..	....	....	....	....
Zinc, V. M. in Poppy Oil, G.	Seal, lots of 1 ton and over.	10¢ to 11¢	....	....	....
Zinc, V. M. in Poppy Oil, G.	lots less than one ton.	11¢ to 11¢	....	....	....
Red Seal.	Red Seal.	10¢ to 10¢	....	....	....
lots of 1 ton and over.	lots of 1 ton and over.	10¢ to 10¢	....	....	....
lots of less than 1 ton.	lots of less than 1 ton.	10¢ to 10¢	....	....	....
DISCOUNTS.—French Zinc.	Discounts to buyers of 10 bbl. lots of one or assorted grades, 15%; 25 bbls., 25%; 50 bbls. 45%. No discount allowed on less than bbl. lots.	....	....	....	....

Colors in Oil—

Black, Drop, Frankfort.	25¢ to ..	....	....	....	....
Black, Drop, English.	12¢ to ..	....	....	....	....
Black, Drop, Domestic.	7¢ to ..	....	....	....	....
Black, Lampblack, Best.	20¢ to ..	....	....	....	....
Black, Lampblack, Common.	7¢ to ..	....	....	....	....
Black, Ivory.	8¢ to ..	....	....	....	....
Blue, Chinese.	35¢ to ..	....	....	....	....
Blue, Prussian.	20¢ to ..	....	....	....	....
Blue, Ultramarine.	12¢ to ..	....	....	....	....
Brown, Vandyke.	7¢ to ..	....	....	....	....
Green, Chrome.	8¢ to ..	....	....	....	....
Green, Paris.	16¢ to ..	....	....	....	....
Sienna, Raw.	7¢ to ..	....	....	....	....
Sienna, American, Burnt and Powdered.	10¢ to ..	....	....	....	....
Talc, French.	12¢ to ..	....	....	....	....
Terra Alba, Fr. Ch.	100 lb.	95¢ to ..	....	....	....
Terra Alba, English.	65¢ to ..	....	....	....	....
Terra Alba, American No. 1	65¢ to ..	....	....	....	....
Terra Alba, American No. 2	65¢ to ..	....	....	....	....
Umber, Turkey, Burnt and Powdered.	8¢ to ..	....	....	....	....
Umber, Turkey, Bnt. Amer.	12¢ to ..	....	....	....	....
Umber, Turkey, R'w Amer.	12¢ to ..	....	....	....	....
Yellow, Chrome.	10¢ to ..	....	....	....	....
Vermilion, American Lead.	11¢ to ..	....	....	....	....
Vermilion, Quicks'r, bulk.	53¢ to ..	....	....	....	....
Vermilion, Quicks'r, bags.	54¢ to ..	....	....	....	....
Vermilion, Quicks'r, sm'rs.	54¢ to ..	....	....	....	....
Dicks.	62¢ to ..	....	....	....	....
Vermilion, English Import.	85¢ to ..	....	....	....	....
Vermilion, Imitation Eng.	8¢ to ..	....	....	....	....
Vermilion, Trieste.	90¢ to ..	....	....	....	....
Vermilion, Chinese.	92¢ to ..	....	....	....	....
Whiting Common.	37¢ to ..	....	....	....	....
Whiting Gilders.	45¢ to ..	....	....	....	....

Glue—

Low Grade.	8¢ to ..	....	....	....	....
Cabinet.	12¢ to ..	....	....	....	....
Medium White.	13¢ to ..	....	....	....	....
Extra White.	17¢ to ..	....	....	....	....
French.	10¢ to ..	....	....	....	....
English.	10¢ to ..	....	....	....	....
Irish.	12¢ to ..	....	....	....	....

Spirits Turpentine—

In regular bbls.	29¢ to ..	....	....	....	....
In machine bbls.	29¢ to ..	....	....	....	....

RATES OF SUBSCRIPTION : INCLUDING POSTAGE.	ALL OTHER COUNTRIES. Per Annum, Postpaid.	WEEKLY EDITION, ISSUED EVERY THURSDAY MORNING.	SEMI-MONTHLY EDITION, FIRST AND THIRD THURSDAYS OF EVERY MONTH.	MONTHLY EDITION, FIRST THURSDAY OF EVERY MONTH.	RATES OF ADVERTISING : ONE SQUARE (12 LINES, ONE INCH).
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CURRENT METAL PRICES.

DECEMBER 20, 1893.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—**Bar Iron from Store—**

Common Iron:	
$\frac{3}{4}$ to 2 in. round and square... 1 to 6 in. x $\frac{3}{8}$ to 1 in....	1.80 @ 1.90¢
Refined Iron:	
$\frac{3}{4}$ to 2 in. round and square. 1 to 4 in. x $\frac{3}{8}$ to $\frac{1}{2}$ in....	1.90 @ 2.00¢
$\frac{4}{5}$ to 6 in. x $\frac{3}{8}$ to 1 in....	
Rods— $\frac{3}{4}$ and 1 $\frac{1}{2}$ round and sq.	2.10 @ 2.20¢
Rods— $\frac{3}{4}$ and 1 $\frac{1}{2}$ round and sq.	2.00 @ 2.10¢
Bands—1 to 6 x 8-16 to No. 12.	2.20 @ 2.30¢
"Burden Best" Iron, base price.	3.00¢
Burden's "H. B. & S." Iron, base price....	2.80¢
"Ulster".....	3.00¢
Norway Bars.....	3.75 @ 4.00¢
Norway Shapes.....	4.50 @ 5.00¢

Merchant Steel from Store—

Open-Hearth and Bessemer Machinery, Tire Calk, Tire and Sleigh Shoe, base price in small lots.....	24¢
Best Cast Steel, base price in small lots.	8¢
Best Cast Steel Machinery, base price in small lots.....	5¢

Sheet Iron from Store—

Black:	
Best Refined Iron.	
Nos. 14 to 20.....	3 @ 31¢
21 to 24.....	3 $\frac{1}{4}$ @ 33¢
25 to 26.....	3 $\frac{1}{4}$ @ 33¢
27.....	3 $\frac{1}{4}$ @ 33¢
28.....	3 $\frac{1}{4}$ @ 33¢

Common less than the above.

Open Hearth Steel.

Best Soft Steel, Nos. 14 to 18.....	24 @ 25¢
" " " 18 to 20.....	24 @ 26¢
" " " 21 to 24.....	3 $\frac{1}{4}$ @ 31¢
" " " 25 to 26.....	3 $\frac{1}{4}$ @ 31¢
" " " 27 to 28.....	3 $\frac{1}{4}$ @ 31¢

Best Bloom Sheets, $\frac{1}{4}$ extra over above prices.
Best Bloom, Galvanized, Jobbing dis. 70 @ 70 & 5%
Ordinary Bessemer, $\frac{1}{4}$ @ 34¢ lower than
above prices.**Russia, Planished, &c.**

Genuine Russia, according to assortment.....	3 @ 12¢ @ 13¢
Patent Planished.....	3 @ A, 10¢; B, 9¢, 5¢
Craig Polished Sheet Steel.....	3 @ 8¢

Foreign Steel from Store—

Best Cast.....	3 @ 15¢
Extra Cast.....	3 @ 16¢ @ 17¢
Swaged, Cast.....	3 @ 16¢
Best Double Shear.....	3 @ 15¢
Blister, 1st quality.....	3 @ 12¢
German Steel, Best.....	3 @ 10¢
2d quality.....	3 @ 9¢
3d quality.....	3 @ 8¢
Sheet Cast Steel, 1st quality.....	3 @ 15¢
2d quality.....	3 @ 14¢
3d quality.....	3 @ 12¢
H. Mushet's "Special".....	3 @ 48¢
" " " Annealed.....	3 @ 75¢
" " " Tinsnic".....	3 @ 20¢
Eicken's Special No. 8.....	3 @ 30¢
" Extra.....	3 @ 15¢

METALS—

Tin—	Per lb
Banca, Pigs.....	22¢ @ 22¢
Straits, Pigs.....	21½¢ @ 22¢
Straits in Bars.....	22½¢ @ 23¢

Tin Plates—

Duty: 2½¢ $\frac{1}{2}$ lb.	
Charcoal Plates—Bright—	
Guaranteed Plates command special prices, according to quality.	Per box.
Melyn and Calland Grade, IC, 10 x 14.....	\$6.50
" " " IC, 12 x 12.....	6.75
" " " IC, 14 x 20.....	6.50
" " " IC, 20 x 28.....	13.00
" " " LX, 10 x 14.....	8.50
" " " LX, 12 x 12.....	8.75
" " " LX, 14 x 20.....	8.50
" " " LX, 20 x 28.....	17.00
" " " DC, 12 x 17.....	6.00
" " " DC, 12 x 17.....	8.00
" " " IC, 10 x 14.....	6.00
" " " IC, 12 x 12.....	6.25
" " " IC, 14 x 20.....	6.00
" " " IC, 20 x 28.....	12.00
" " " LX, 10 x 14.....	7.50
" " " LX, 12 x 13.....	7.75
" " " LX, 14 x 20.....	7.50
" " " LX, 20 x 28.....	15.00
" " " DC, 12 x 17.....	5.50
" " " DX, 12 x 17.....	7.00

Coke Plates—Bright—

Steel Coke, -IC, 10 x 14, 14 x 20.....	\$5.50
10 x 20.....	8.50
20 x 28.....	11.50
20 x 28.....	12.00
IX, 10 x 14, 14 x 20.....	7.00

BV Grade, -IC, 10 x 14, 14 x 20.....	5.50
Charcoal Plates—Terne—	

Guaranteed Plates command special prices according to quality.	
Dean Grade.—IC, 14 x 20.....	\$5.65
20 x 28.....	11.00
IX, 14 x 20.....	8.40
20 x 28.....	12.80

Abecarne Grade.—IC, 14 x 20.....	5.55
IX, 14 x 20.....	10.75
20 x 28.....	12.00

Tin Boiler Plates—

XXX, 14 x 28.....	12 sheets.....	\$18.35
XXX, 14 x 28.....	14 x 50.....	14.50
XXX, 14 x 31.....	12 sheets.....	16.00

American Terne Plates.—Apollo.

14 x 20.....	\$6.25
14 x 28.....	12.50
IX, 14 x 20.....	7.25
IX, 14 x 28.....	14.50

Copper
DUTY: Pig, Bar and Ingot, 1½¢; Old Copper, 1¢
\$ lb. Manufactured (including all articles of
which Copper is a component of chief value),
35% ad valorem.

Ingot—

Lake..... @ 11¢

Ansonia grade Arizona..... @ 10¢

Ansonia grade Casting..... @ 10¢

Sheet and Bolt—Prices adopted by the Association of Copper
Manufacturers of the United States, May
19, 1892. Subject to a discount of 15% @ 25%,
according to size of order. Stubs' gauge
standard.Weights per sq. foot and prices
per pound.

Not wider than	And longer than	Over 84 oz.	64 oz.	32 oz.	16 oz.	12 oz.	10 oz.	Less than
30	72	22	22	22	23	24	25	26
30	72	22	22	22	23	25	27	31
36	96	22	22	23	24	26	30	33
36	96	22	22	23	25	27	31	35
48	96	22	22	24	26	28	32	38
48	96	22	22	25	27	29	33	38
60	96	22	22	27	30	34	38	42
84	96	23	24	—	—	—	—	—
Ov'r 84 in. wide	25	27	—	—	—	—	—	—

Bolt Copper, $\frac{1}{2}$ inch diameter and over, \$ lb. 22¢
Circles, Segments and Pattern Sheets, 60 in.
diameter and less, $\frac{3}{4}$ \$ lb advance over prices
of Sheet Copper required to cut them from.

Circles, Segments and Pattern Sheets, over 60
in. diameter, up to 96 in. diameter inclusive,
4¢ \$ lb advance over prices of Sheet Copper

required to cut them from.

Cold or Hard Rolled Copper 14 oz. \$ per square foot
and heavier, 1¢ \$ lb over the foregoing prices.Cold or Hard Rolled Copper lighter than 14 oz. \$ per square foot
and heavier, 1¢ \$ lb over the foregoing prices.All Polished Copper over 20 in. wide, 2¢ \$ lb
advance over the foregoing prices.**Copper Bottoms, Pits and Flats—**

Per lb.

14 ounce to square foot and heavier..... 26¢

12 ounce and up to 14 ounce to square foot..... 27¢

10 ounce and up to 12 ounce..... 28¢

Lighter than 10 ounce..... 32¢

Circles less than 8 inches diameter, 2¢ \$ lb additional.

Circles over 13 inches diameter are not classed
as Copper Bottoms.

15% @ 25% discount, according to size of order.

Copper Wash Bowl Bottoms—

Tinned..... \$ lb 34¢, 15% @ 25%

Tinning—

Net.

Tinning sheets on one side, 10, 12 and 14 x 48
each..... 8¢

Tinning sheets on one side, 30 x 60 each..... 30¢

For tinning boiler sizes 9 in. (sheets 14 in. x 60
in.), each..... 15¢For tinning boiler sizes, 8 in. (sheets 14 in. x 56
in.), each..... 12¢

For tinning both sides double the above prices.

Planished Brass and Copper—

Not larger than 30 x 60.

16 oz. and heavier..... 24¢ \$ lb

14 oz. and heavier..... 25¢ \$ lb

12 oz. and heavier..... 27¢ \$ lb

Copper, Bronze and Gilding Tube, 3¢ \$ lb additional
Brazed Brass Tubing. (To No. 20 inclusive.)

Brown & Sharpe's gauge standard.

Above 5-16 inch to 3 inch, inclusive..... 35¢

Plain, 5-16 inch..... 45¢

Plain, 3-16 inch..... 60¢

Plain, 1-16 inch..... \$1.00

Fancy Tubing, Brass, to No. 20 inclusive..... 45¢ \$ lb

Bronze Tubing, 3¢ \$ lb more than Brass.

Discount from list..... 30¢ @ 5%

Roll and Sheet Brass—

(Brown & Sharpe Standard Gauge.)

Common High Brass: in., in., in., in., in., in., in., in.

Wider than and including 2 10 12 14 16 18 20 22

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